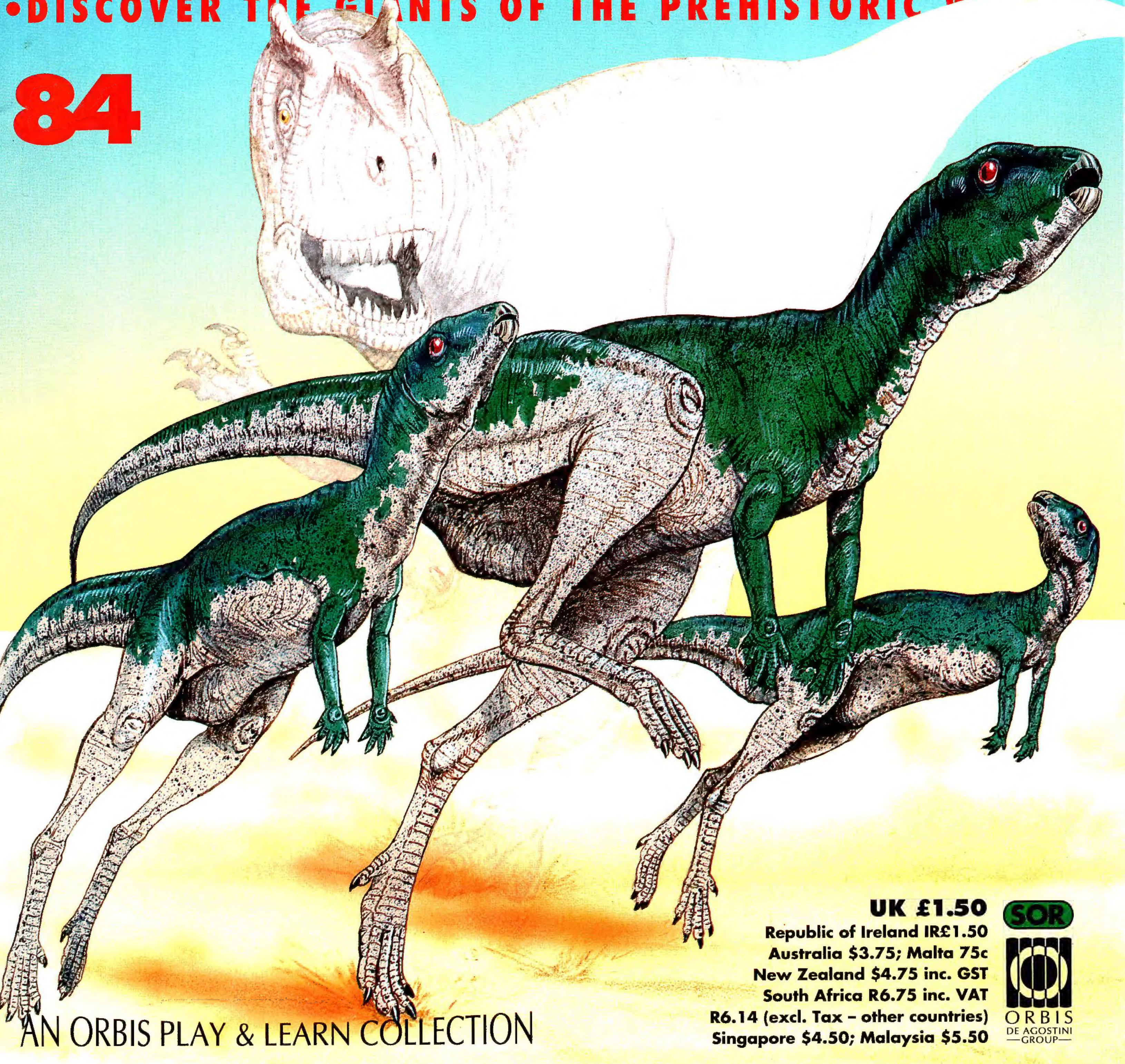
morrison

DINOSAURS!

•DISCOVER THE GIANTS OF THE PREHISTORIC WO

84



UK £1.50
Republic of Ireland IR£1.50
Australia $3.75; Malta 75c
New Zealand $4.75 inc. GST
South Africa R6.75 inc. VAT
R6.14 (excl. Tax – other countries)
Singapore $4.50; Malaysia $5.50

SOR

ORBIS
DE AGOSTINI
—GROUP—

AN ORBIS PLAY & LEARN COLLECTION

DINOSAURS!

• DISCOVER THE GIANTS OF THE PREHISTORIC WORLD •

IDENTIKIT

Meet a speedy dinosaur plus two more prehistoric beasts
DYSALOTOSAURUS 1993
TELEOCERAS 1996
DIADECTES 1997

PREHISTORIC WORLD

Take a walk in the Triassic on a DINOSAUR SAFARI 1998

SPOTTER'S GUIDE

See a dinosaur from every angle!
VELOCIRAPTOR 2006

TIME DETECTIVE

Discover how the famous dinosaur hunter Barnum Brown went about CATCHING A CORYTHOSAURUS 2008

HISTORY IN PICTURES

A DAY IN THE LIFE OF ARCHAEOPTERYX 2012

HOW TO DRAW

Discover how to draw a prehistoric hedgehog 2016

ASK THE EXPERT

Dr David Norman of Cambridge University answers more of your dinosaur queries BACK COVER

PLUS

GIANTS OF THE PAST

A herd of *Dysalotosaurus* feed in Late Jurassic Africa 2002

3-D Gallery

Baryonyx finds two *Polacanthus* frightening away the fish 2004

FACT FILE

More fascinating trivia and the weekly quiz 1342

HOW TO CONTINUE YOUR COLLECTION

Most people collect their issues by placing a regular order with their newsagent. You can, however, also obtain your copies directly in the following ways:

UK and REPUBLIC OF IRELAND
If you have any difficulty obtaining your copies of DINOSAURS! from your regular retailler, telephone Nicky Scott on 081-846 9977.
Subscriptions: Phone 0424 755755 for information (Mon-Fri, 9am-5pm).
Back issues: If you miss any issues of DINOSAURS!, these can be ordered through your newsagent. Alternatively, you can order back issues by phoning 0424 755755 (Mon-Fri, 9am-5pm). Credit card orders accepted. Or write to: Back Issues Department, DINOSAURS!, PO Box 1, Hastings, TN35 4TJ.
Back issue charges: Issue 1: 30p. All other issues: £1.50. Postage and packing: 50p per copy. When ordering, please enclose:
1. Your name, address and postcode.
2. The issue number(s) and number of copies of each issue you require.
3. Your payment. This can be by postal order or cheque made payable to Orbis Publishing Ltd. You can calculate the amount based on the charges shown above.
Binders:
UK: DINOSAURS! binders are now available. Each binder holds 13 issues and costs just £4.95 (including £1 p&p). You can order binders direct from: DINOSAURS!, PO Box 1, Hastings, TN35 4TJ. Please enclose payment for £4.95 for each binder. You can pay by cheque or postal order made payable to Orbis Publishing Limited, or phone 0424 755755. Telephone credit card orders are accepted.
Republic of Ireland: Binders are available through your newsagent, priced at £4.95.

AUSTRALIA
Back issues: Write to: Gordon & Gotch Ltd, P.O. Box 290, Burwood, Victoria 3125. Please enclose your payment of the cover price plus $1 per issue p&h.
Binders: Details will be published in future issues. Or you can write to: DINOSAURS! Binders, Bissett Magazine Service Pty Ltd, MC Box 460, Eastern Mail Centre, Victoria 33110.

NEW ZEALAND
Back issues: Write for details to: Gordon & Gotch Ltd, P.O. Box 584, Auckland.
Binders: Write for details to: Gordon & Gotch Ltd, P.O. Box 584, Auckland.

MALTA
Back issues: These can be ordered through your newsagent.
Binders: Write for details to: Miller (Malta) Ltd, Valetta.

SOUTH AFRICA
Back issues: Telephone 011 402 3816 for details. Or write to: Back Issues Department, Republican News Agency, PO Box 16034, Doornfontein, 2028. Please enclose your payment of the cover price plus 2 Rand per issue p&h.
Binders: These can be obtained at the shop where you bought this magazine.

SINGAPORE, MALAYSIA
Back issues and binders: These can be obtained at the shop where you bought this magazine.

DINOSAURS! is published by
Orbis Publishing Ltd
Griffin House
161 Hammersmith Rd
London W6 8SD
© 1994 Orbis Publishing

EDITORIAL & DESIGN by
Tucker Slingsby
3G London House
66-68 Upper Richmond Rd
London SW15 2RP

N84 94 11 10
ISBN 0 7489 1684 9

Printed in Italy by Officine Grafiche
De Agostini, Novara

DYSALOTOSAURUS

Herds of gazelle-like *Dysalotosaurus* pounded the prehistoric plains.

Dysalotosaurus was a plant-eating hypsilophodontid. The hypsilophodontids were the most successful family of dinosaurs. Fossil records show there were hypsilophodontids on Earth for around 100 million years and that they spread right across the globe. Compare that with humans. We've only been around for 200,000 years!

ALL IN THE FAMILY

Hypsilophodontids are sometimes called 'dinosaur gazelles' because they could sprint very fast, as gazelles do today. A member of this family, *Hypsilophodon,* is reckoned by experts to be one of the fastest dinosaurs ever. *Hypsilophodon* grew between 1.4m and 2.4m long. *Dysalotosaurus* was bigger than *Hypsilophodon* and probably slower. But a strong adult *Dysalotosaurus* could still outrun most hungry meat-eaters.

MUSCLE POWER

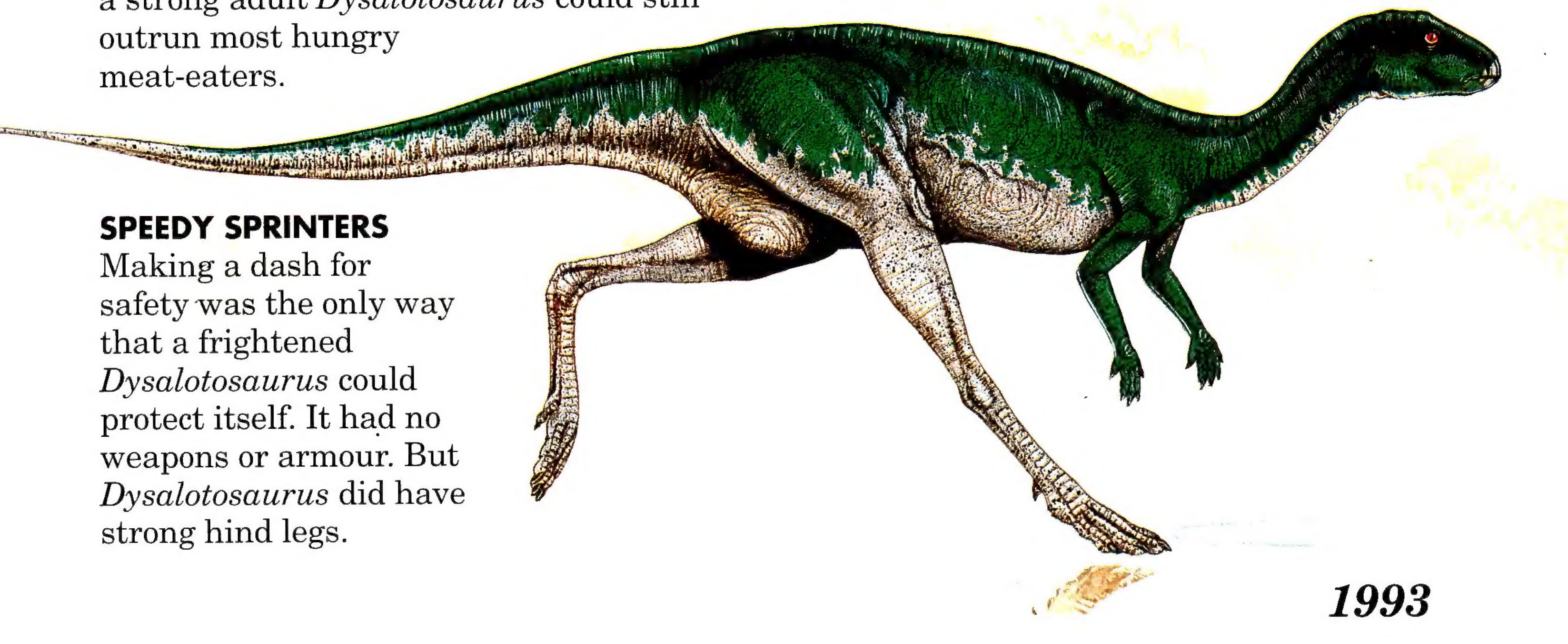
Dysalotosaurus' legs were operated by powerful muscles at the top, and they worked rather like a pendulum. The legs swung backwards and forwards very quickly, helping the dinosaur to build up speed and dash along. Fast-moving deer and gazelles today have similar legs to *Dysalotosaurus.* Like them, the dinosaur had short thigh bones and long shin bones.

FEET AND TAIL TRICKS

Dysalotosaurus also had strong, sharp-clawed feet which gripped the ground securely and helped push it forwards. Its long tail also helped as it dashed along. *Dysalotosaurus*' tail would not have trailed on the ground but would have stood out behind the dinosaur as it ran. The tail acted as a balance, rather like a tightrope walker's pole helps someone to balance on a rope. The stiff tail helped to steady the dinosaur's body, allowing it to dart from side to side as it ran. This would help *Dysalotosaurus* to escape from predators.

SPEEDY SPRINTERS

Making a dash for safety was the only way that a frightened *Dysalotosaurus* could protect itself. It had no weapons or armour. But *Dysalotosaurus* did have strong hind legs.



CHEEKY CHEWER

Herds of *Dysalotosaurus* probably grazed on the lush plants that grew between the lakes and rivers of the flood plains. *Dysalotosaurus* was an efficient eater, nipping off tender shoots with its horny beak. Then it chewed the bits to pulp, ready for swallowing. If *Dysalotosaurus* bit off more food than it could chew in one go, it stored the extra in its roomy cheek pouches to chew later.

ON THE PROWL

Peaceful plant-eaters such as *Dysalotosaurus* were preyed on by giant meat-eating dinosaurs. Like many of today's plant-eaters, *Dysalotosaurus* herded together for protection. Packs of predators, such as fearsome *Allosaurus,* may have followed a herd of *Dysalotosaurus*, waiting for the right moment to pounce. A healthy, fully grown *Dysalotosaurus* could have escaped by running faster than a bulky *Allosaurus*. But any young and sick members of the group would have been an easy target.

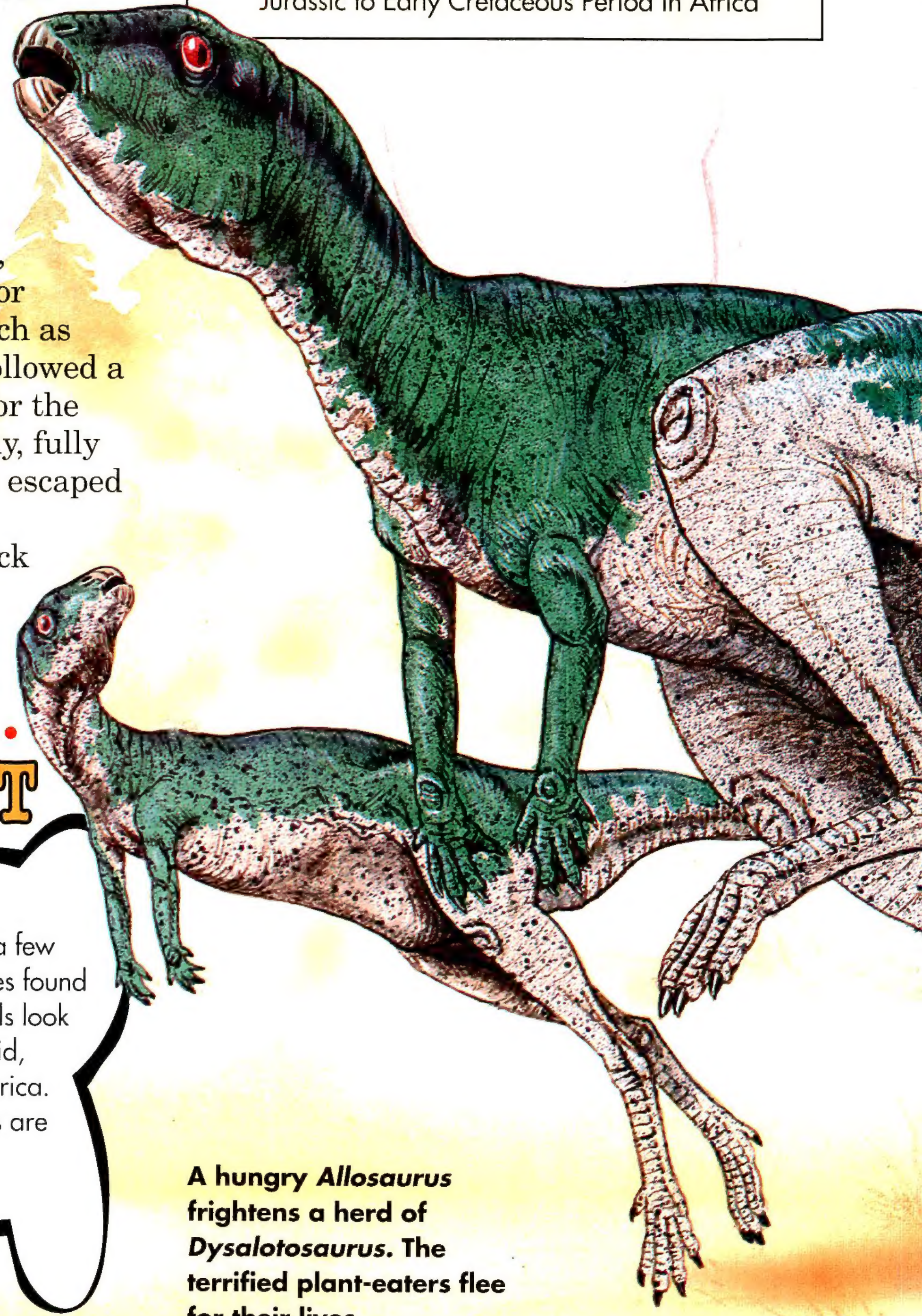
MONSTER FACTS

- **NAME:** *Dysalotosaurus* (di-sal-o-toe-saw-rus) means 'lost wood reptile'
- **GROUP:** dinosaur
- **SIZE:** 2.4m long
- **FOOD:** plants
- **LIVED:** about 140 million years ago in the Late Jurassic to Early Cretaceous Period in Africa

IT'S A FACT

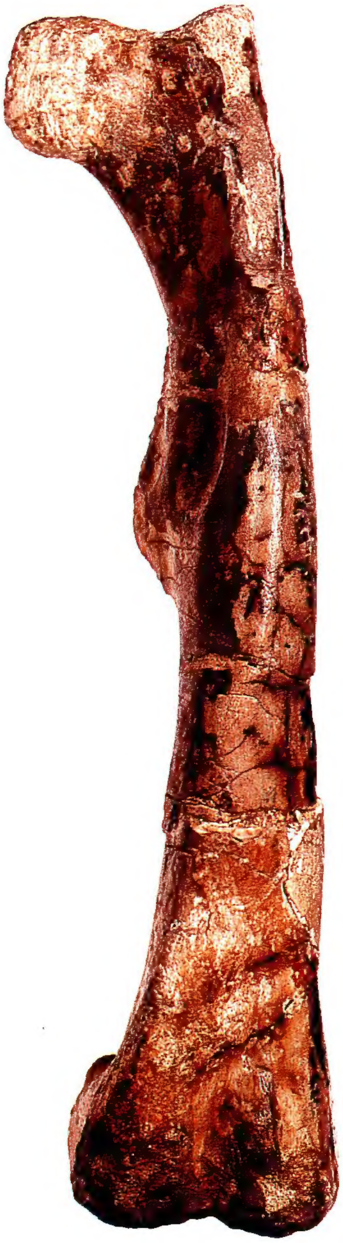
TWO INTO ONE

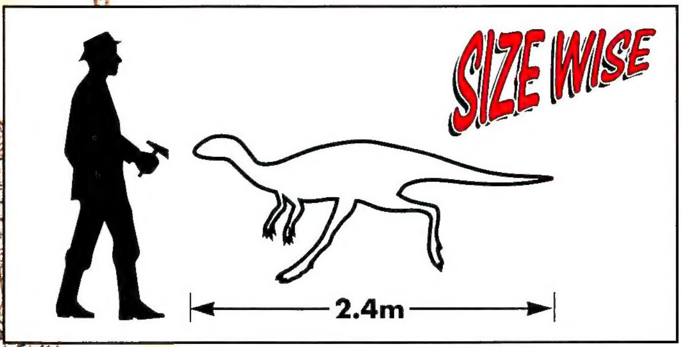
Dysalotosaurus is known from just a few incomplete skulls and scattered bones found in Tanzania, East Africa. The fossils look very like another hypsilophodontid, called *Dryosaurus,* from North America. Some experts believe that these finds are really *Dryosaurus* bones.



A hungry *Allosaurus* frightens a herd of *Dysalotosaurus*. The terrified plant-eaters flee for their lives.

***Dysalotosaurus* or *Dryosaurus*? Experts do not agree about these bones found in Tanzania, East Africa. The femur or thigh bone (right) is from the right leg and is 196mm long. The bone below is a vertebra from the tail.**

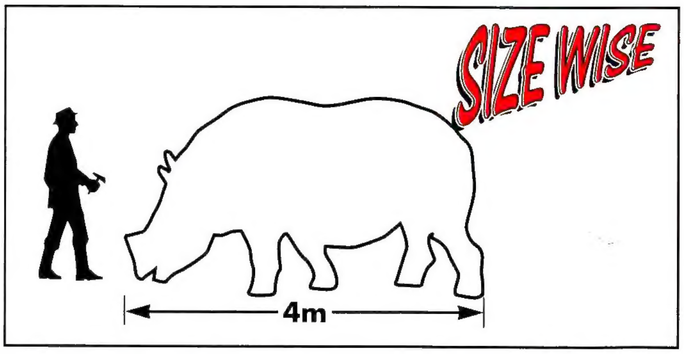




TELEOCERAS

Teleoceras was a relative of today's rhinoceros, but it behaved more like a hippopotamus.

Rhinos only live in Africa and Asia today. But millions of years ago, there were three families of rhinos, spread across the world. *Teleoceras* fossils have been found in Nebraska, USA.



MONSTER FACTS

- **NAME:** *Teleoceras* (tee-lee-oh-ser-as) means 'long and horned'
- **GROUP:** mammal
- **SIZE:** 4m long
- **FOOD:** plants
- **LIVED:** about 40 to 10 million years ago in the Late Eocene to Early Miocene in North America

WATER LIFE

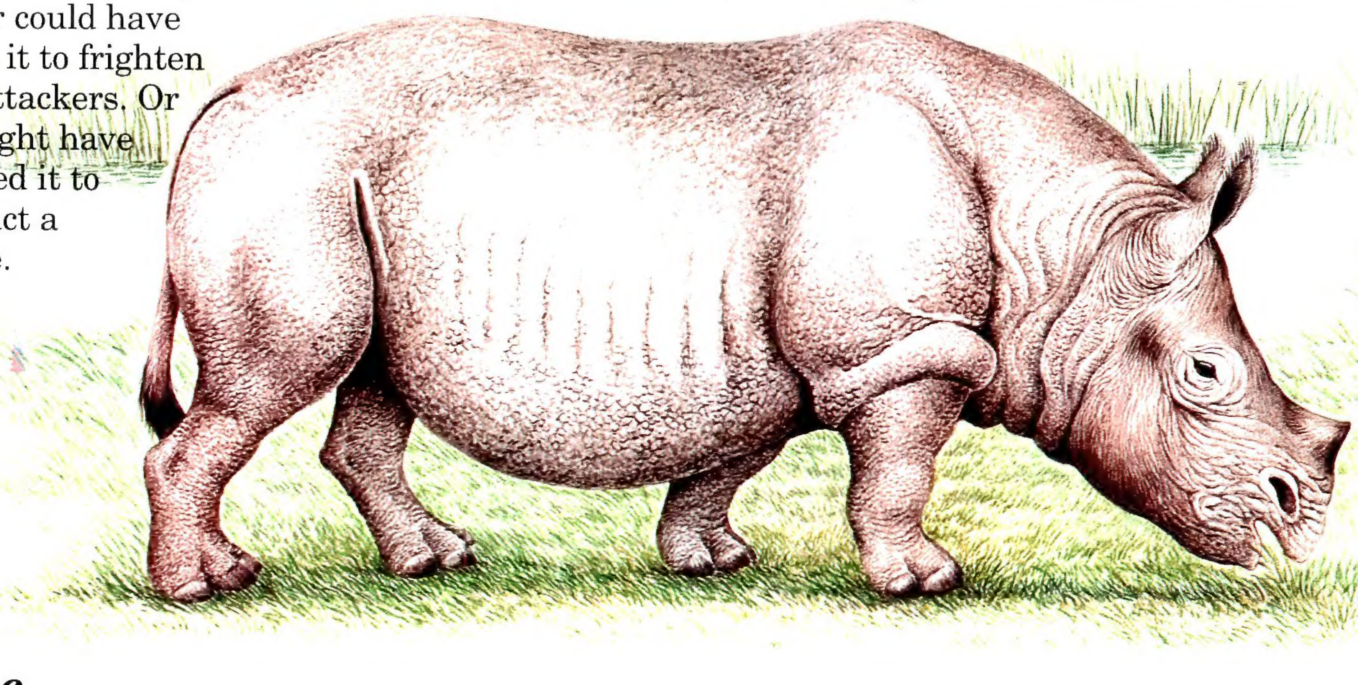
Teleoceras was a relative of today's rhino, but was closer in shape to today's hippo. This bulky plant-eater had a long, barrel-shaped body and very short, stumpy legs. It was difficult for *Teleoceras* to walk because its body was so close to the ground. In fact, it probably spent much of the time living in and under water.

USEFUL HORN

Teleoceras had a short, cone-shaped horn on its nose. The plant-eater could have used it to frighten off attackers. Or it might have helped it to attract a mate.

HAIRY NOSE

Many early rhinos had horns. But these often looked more fearsome than they were. Most were just made of matted hair.



DIADECTES

***Diadectes* was a prehistoric puzzle. Was it an amphibian? Or was it perhaps a reptile?**

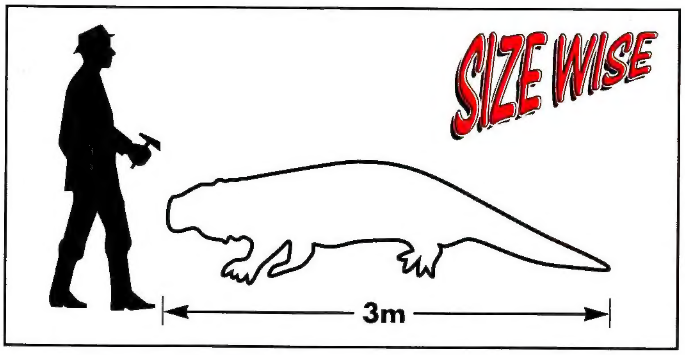
Amphibians can live on land and in water. So can reptiles. But most amphibians lay jelly-like eggs in water, while reptiles can lay hard-shelled eggs on land.

SKULL SOLUTION

Diadectes' skeleton looked like a reptile's. And the huge creature was able to move about on land. But experts now believe that *Diadectes* was an amphibian because of the shape of its skull.

EARLY VEGETARIAN

Diadectes was one of the biggest land animals alive in the Early Permian, more than 270 million years ago. It may even have been the earliest land-living vertebrate (animal with a backbone) that had plants as part of its diet.

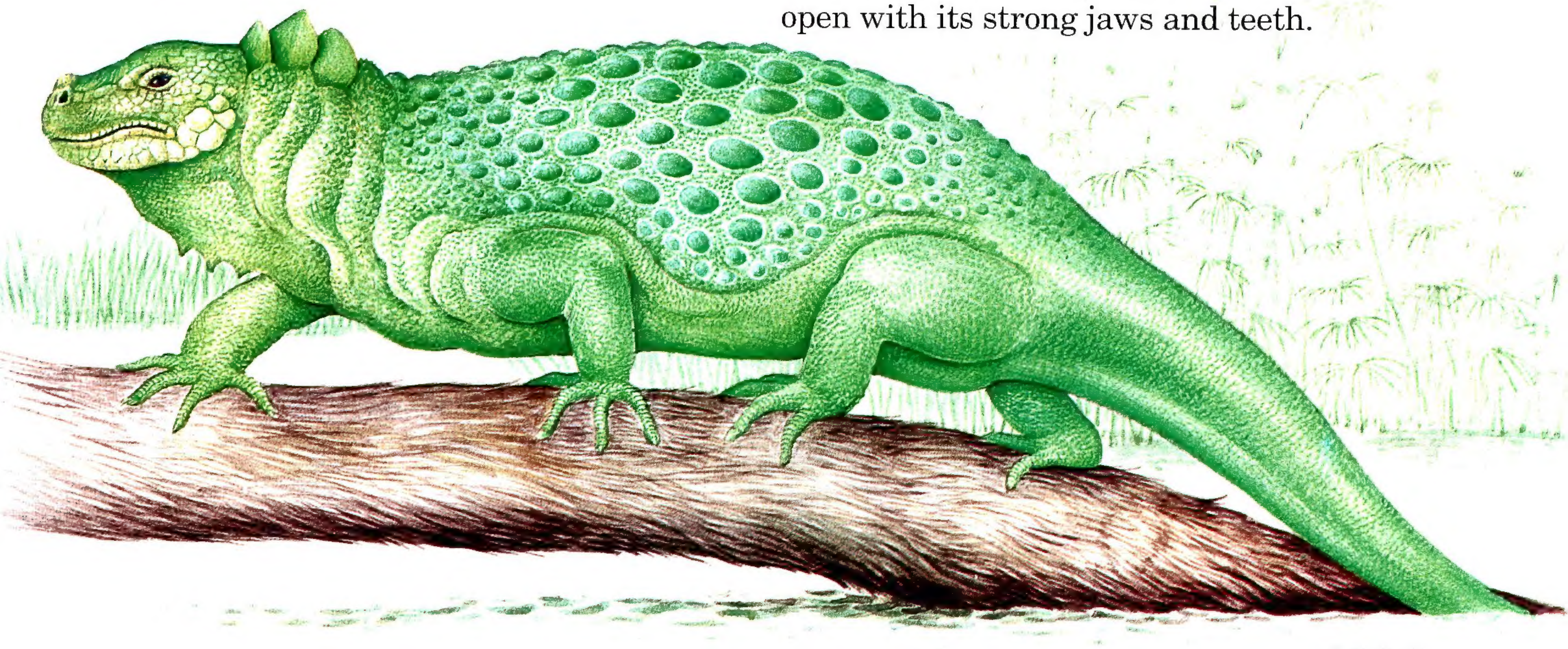


MONSTER FACTS

- **NAME:** *Diadectes* (dy-a-dek-tees) means 'through biter'
- **GROUP:** amphibian
- **SIZE:** 3m long
- **FOOD:** plants, shellfish
- **LIVED:** about 270 million years ago, in the Early Permian Period in Texas, USA

FISHY FOOD

Experts believe *Diadectes* may have eaten shellfish, too. Perhaps it cracked them open with its strong jaws and teeth.



DINOSAUR SAFARI

TRIASSIC

SOUTHERN EUROPE

Imagine you could travel about 210 million years back in time. Look around you. Nothing looks the same as today. You are in a Triassic landscape!

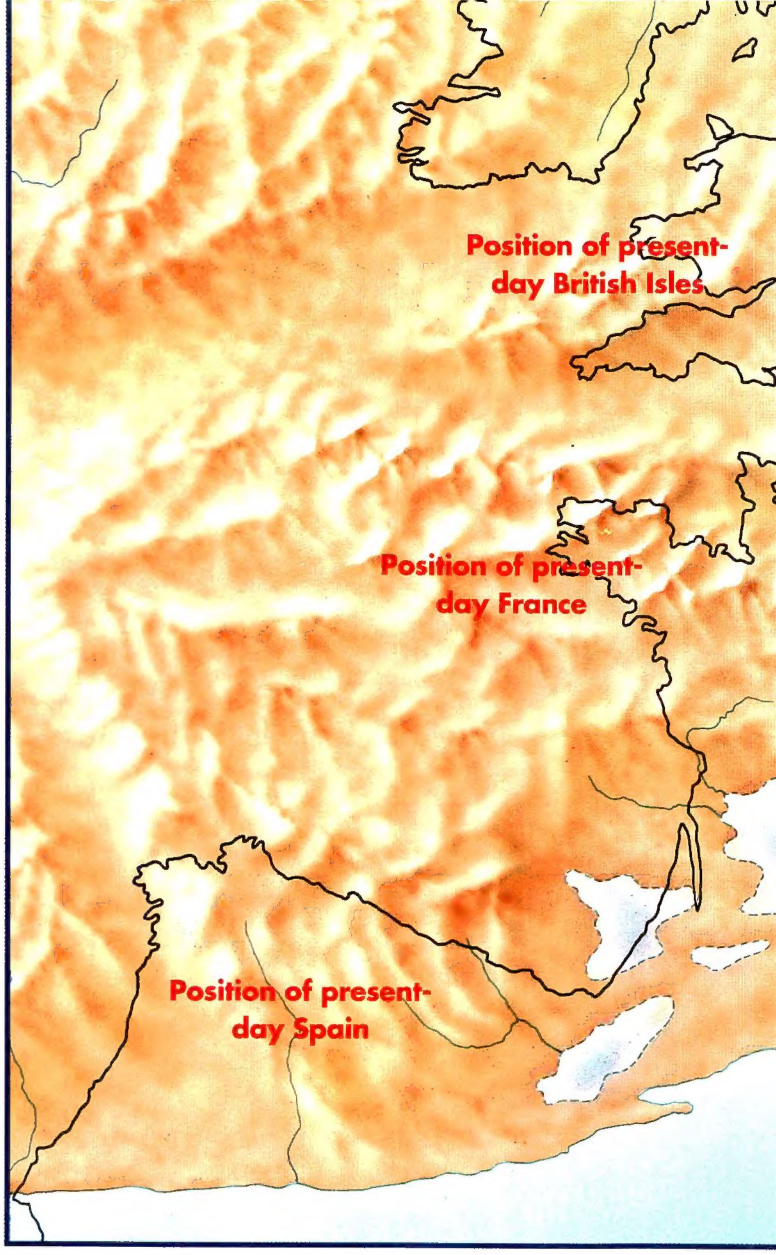
Our safari begins on the shore of a vast landmass. All the continents of the world are joined together in one great continent called Pangaea. A huge inlet of the surrounding ocean almost cuts this landmass in two. This inlet is called the Tethys Sea, and you are now standing on its north-western shore.

AN UNFINISHED CONTINENT

Europe has not been completed yet. Only half of it exists. In the continent to the north of you lie mountains. This region will eventually become northern Europe. To your south there is nothing but sea. Vast banks of mud and sand are building up on the bed of the Tethys Sea. These will gradually turn into rocks and be squeezed up as the mountains we call the Alps.

HOT SHORELINE

You are close to the Equator. It is hot and dry. A paddle in the sea seems a good idea, but the water is warmer than you are! Dust and sand from the northern plateaus have blown across, forming deserts. The sea currents build up huge sandbars along the coast. Your route will take you along this coast towards the east.

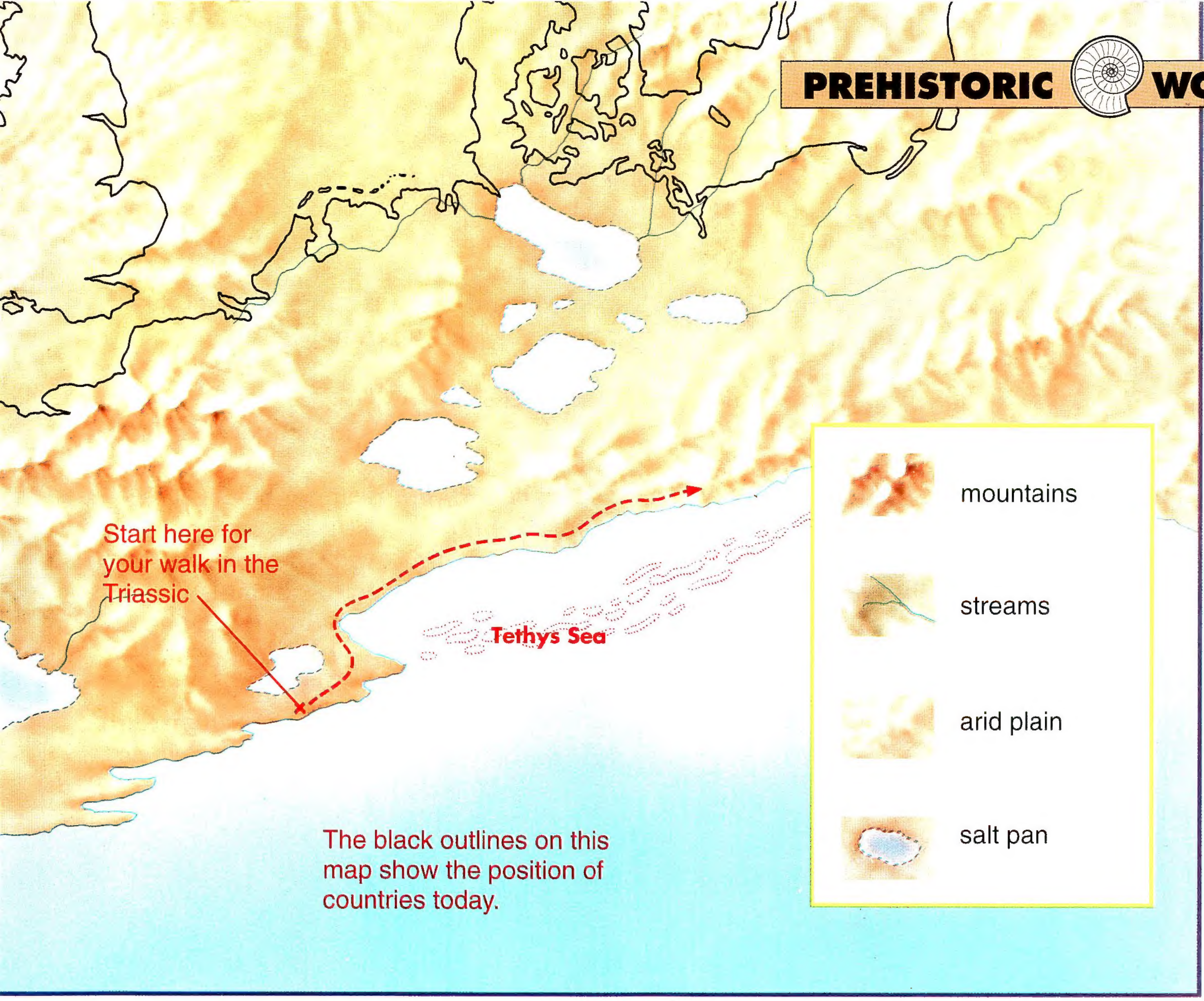

Position of present-day British Isles
Position of present-day France
Position of present-day Spain

A DRY SEA BED

As you travel, you leave the mountains behind. A great plain stretches north across the continent. In the Permian Period, and the earlier part of the Triassic, there was a vast inland sea here. The sea spread northwards from the Tethys right across Europe. It reached to the area that will one day become the North Sea and the British Isles. Now that sea has dried up, leaving dazzling lakes of salt.

STREAMS CARRY STONES

Here and there, streams flow from the surrounding mountains, topping up the lakes. The streams carry small boulders and pebbles. These are beginning to build up to form rocky slopes around the plain.


Start here for your walk in the Triassic
Tethys Sea
The black outlines on this map show the position of countries today.
mountains
streams
arid plain
salt pan

BEASTS OF THE SEA

The land seems dry and barren. But to the south the sea is full of life. You can spot coil-shelled ammonites and other shellfishes washed up along the shore. *Nothosaurs* have slunk up on the beach to lay their eggs. Related to the ancestors of plesiosaurs, these 3m-long reptiles have webbed feet and a fin on their tail.

WATCH OUT – *NOTHOSAURS* ABOUT!

The *nothosaurs'* long jaws are full of vicious, fish-catching teeth, and can be used as dangerous weapons. Warily, you skirt round these fierce-looking creatures and continue your journey along the Triassic shore. What other surprises will the journey have in store?

Perhaps part of the landscape on your walk will look like this oasis today.

FLYING HIGH

For a long time, the only signs of life along the desolate shore are the pterosaurs. They soar and wheel on the air currents, settling to feed on the washed-up bodies of dead sea creatures. The biggest creatures washed up on the shore are the placodonts like *Placodus*. It looks like a newt, but is as big as you! Its short, heavy jaws and big blunt teeth are ideal for crushing the shellfishes on which it lives.

IN THE WATER

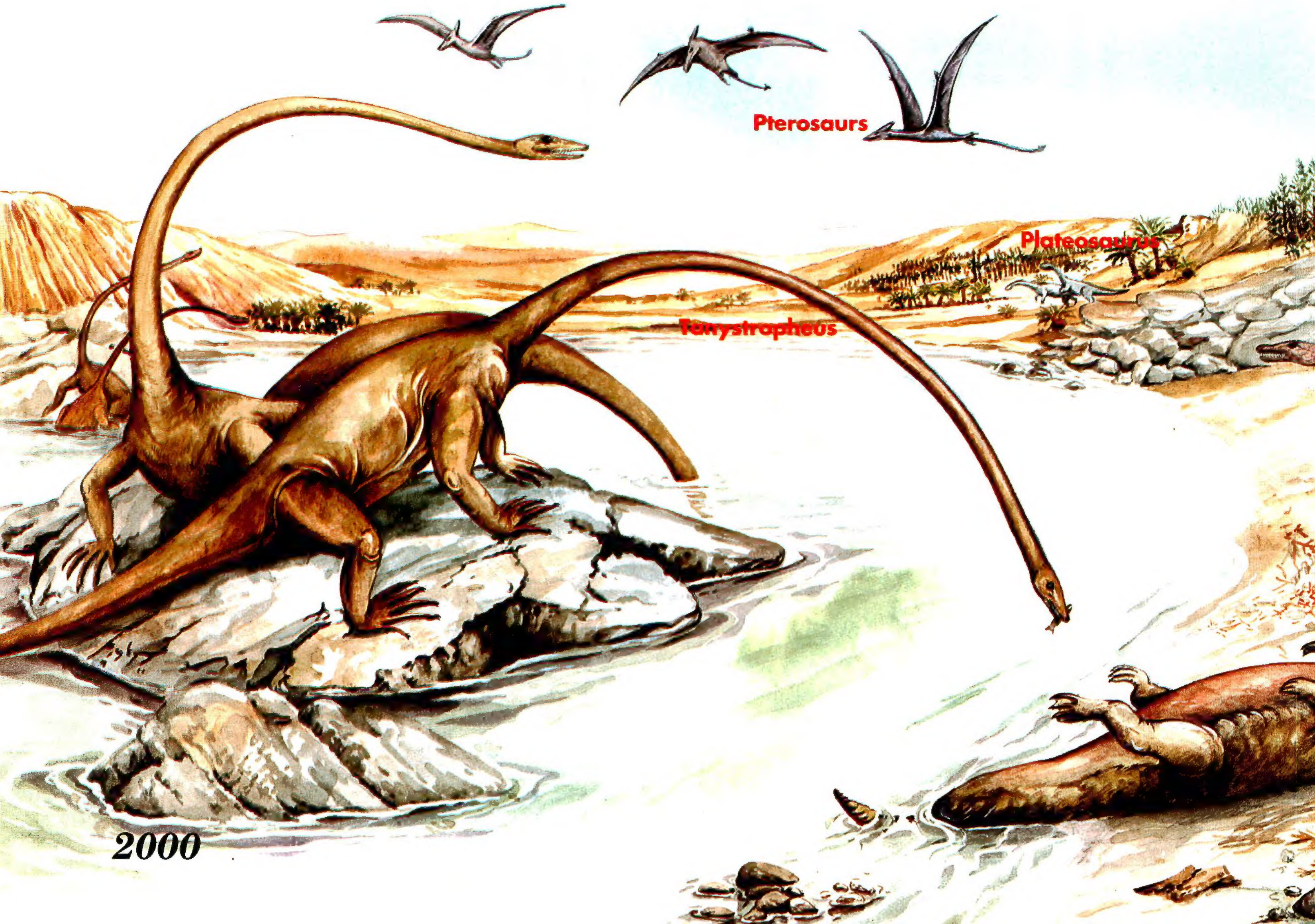
Hidden from view, in the water, are some of the earliest ichthyosaurs, such as *Mixosaurus*. Long and slender, but without the fish-like tail of the later ichthyosaurs, they dive through the spray, hunting for the fishes they live on.

SPONGE REEF

Just off shore, the waves are breaking on a reef – a barrier of rock built up by living things. Today's reefs in tropical waters are made of coral. The Triassic reefs, however, have been built up from sponges.

DESERT LIFE

Ahead, through the shimmer of heat and shifting sand, you see hills. Limestone cliffs rise up before you. Despite the dryness, plants seem to flourish here, especially in the moist streams. And where there is vegetation, there must be animals too! You soon spot a herd of *Plateosaurus*. They are browsing on the tree ferns and any other plants they can find. They can rear up on their hind legs to reach the succulent leaves at the tops of the trees.



ROCK-POOL FEEDERS

On the rocks at the foot of the nearest cliffs you see long, waving necks, like tentacles. They belong to a small group of *Tanystropheus*, a strange, lizard-like animal. They sit in the hot sun, dipping their long necks into the rock pools to find the fishes and shellfishes they feed on.

TRACK MAKER REVEALED

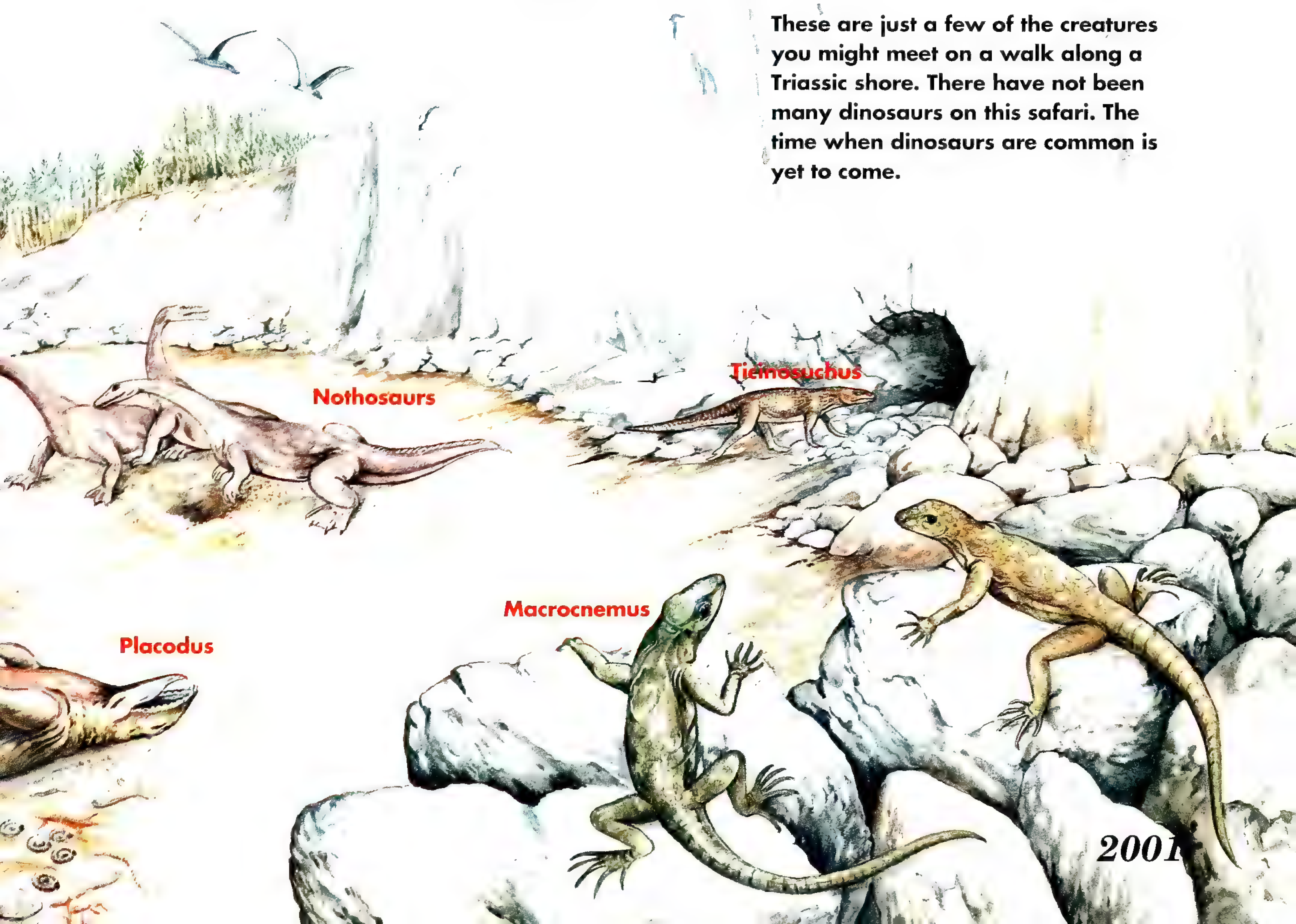
You scramble over rocks and find yourself in a sandy cove. On the sand is a set of strange footprints. They look a bit like the marks of human hands, but with the thumb to the outside. Scientists call these footprints *Cheirotherium* ('hand beast'), and for a long time they had no idea what kind of animal made them. But look! You suddenly see the creature that made them.

CROC IN CAVE

The crocodile-like animal called *Ticinosuchus* is the 'hand beast'. It scampers away from you, dodging up the rubble at the base of the cliff and disappears into a cave.

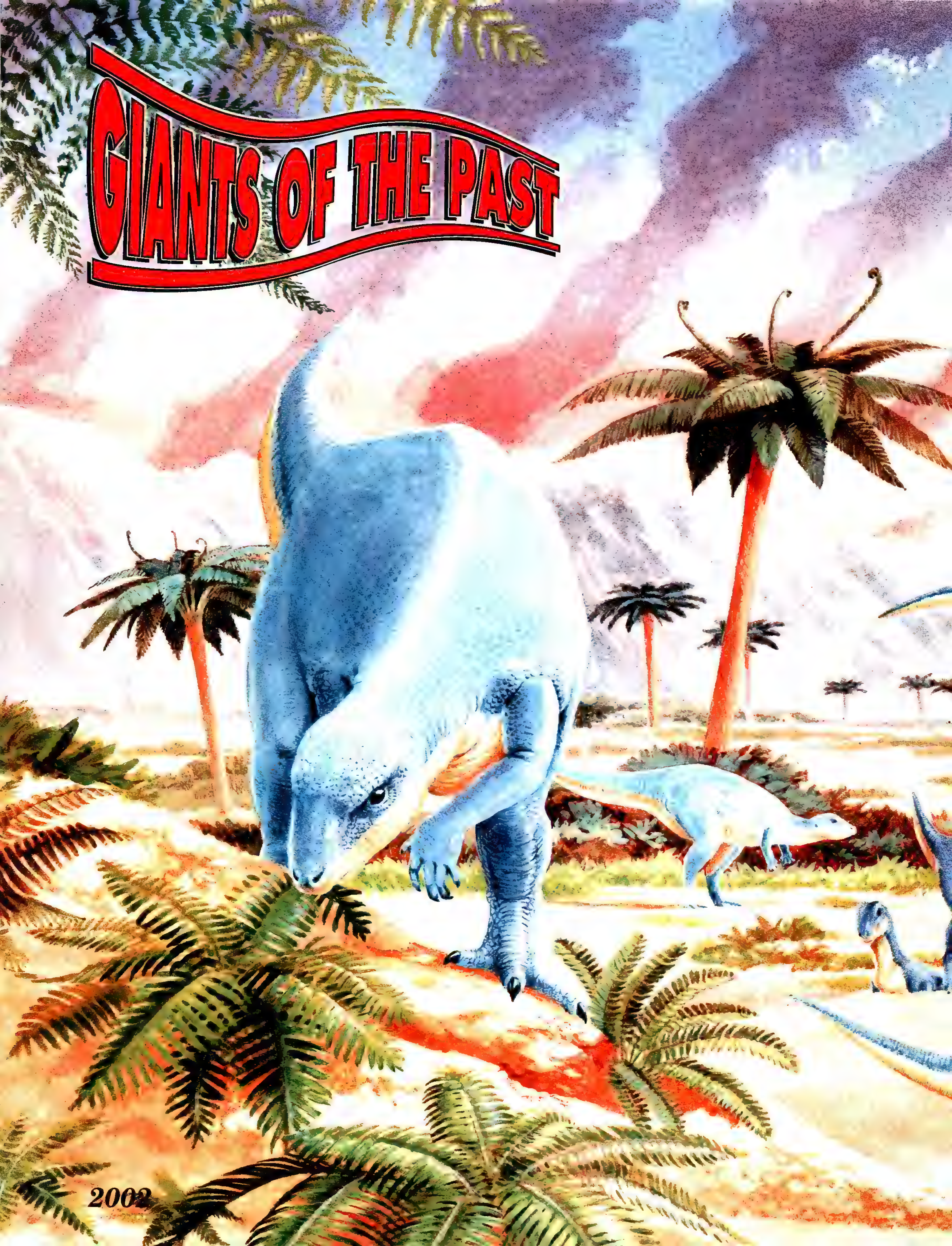
SHELTER FROM THE STORM

Suddenly, the sky grows dark. A chill wind swirls up from the sea. A black cloud covers the sun. The rain starts. You dodge into a cave to escape, making sure it's not the one in which the *Ticinosuchus* is hiding. You don't want to meet a 3m-long meat-eater in the dark! The cave is full of tiny lizard-like *Macrocnemus*. They scuttle over the rotting seaweed, catching insects. Once the rain stops, you can continue on your Triassic safari.



These are just a few of the creatures you might meet on a walk along a Triassic shore. There have not been many dinosaurs on this safari. The time when dinosaurs are common is yet to come.

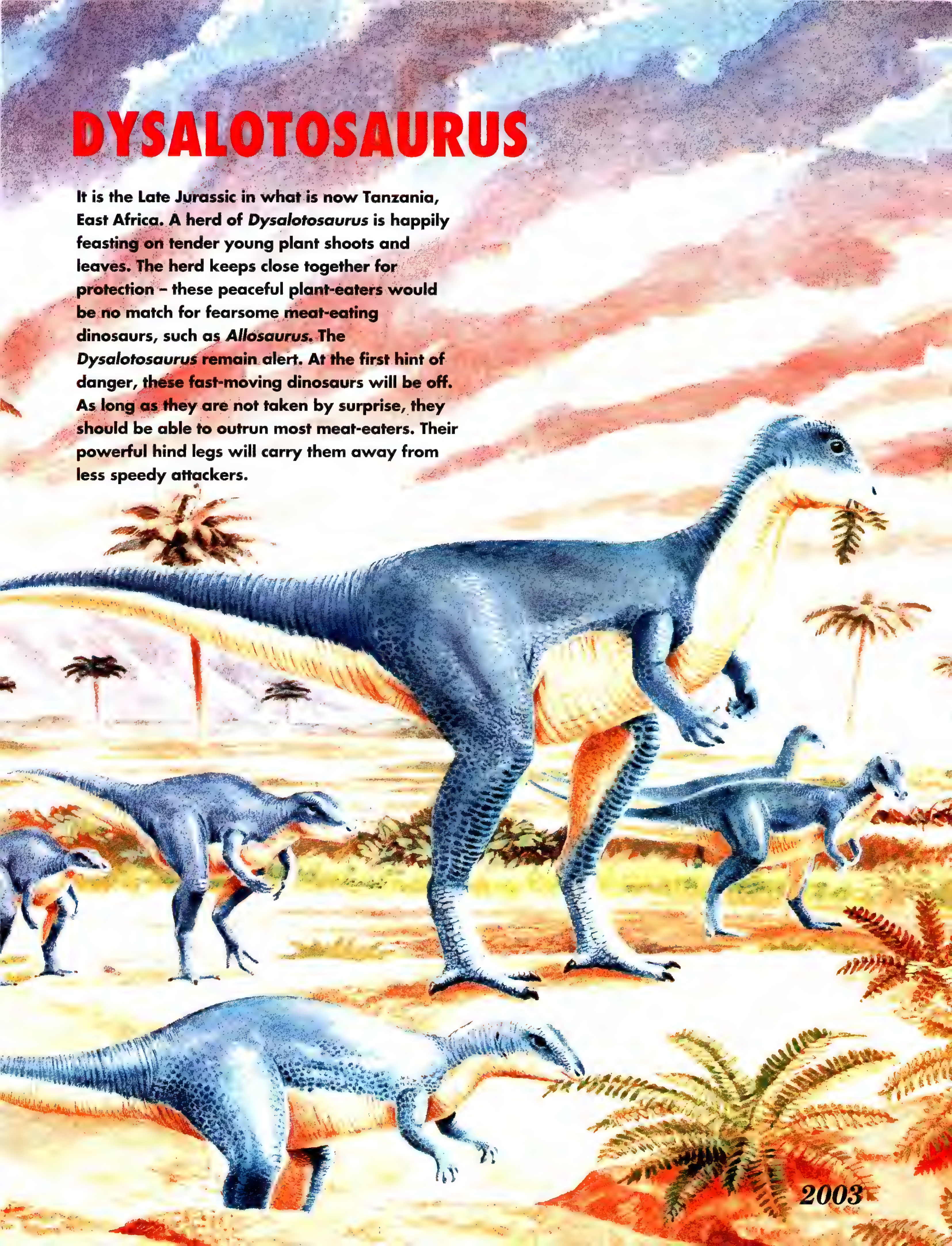
GIANTS OF THE PAST



2002

DYSALOTOSAURUS

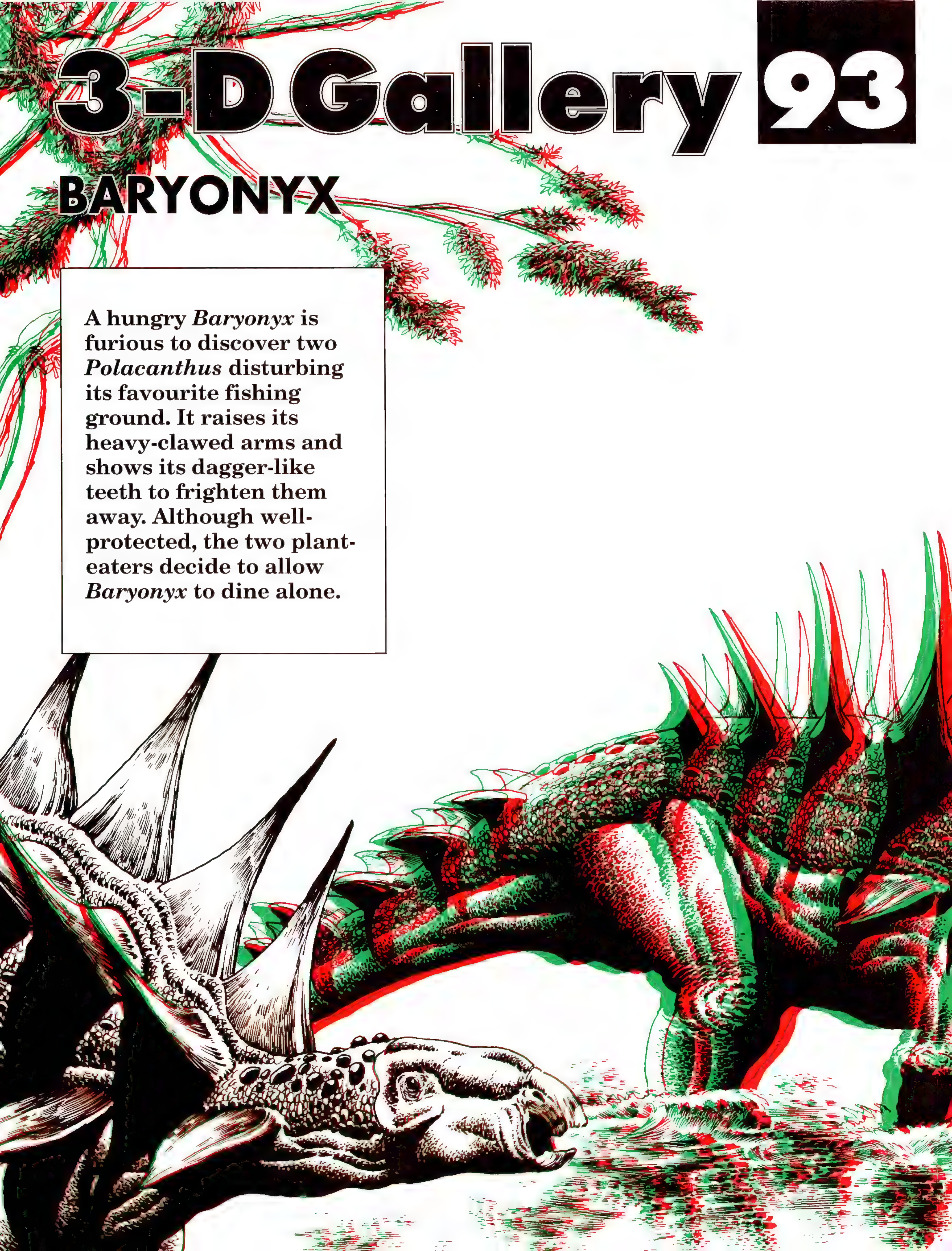
It is the Late Jurassic in what is now Tanzania, East Africa. A herd of *Dysalotosaurus* is happily feasting on tender young plant shoots and leaves. The herd keeps close together for protection – these peaceful plant-eaters would be no match for fearsome meat-eating dinosaurs, such as *Allosaurus*. The *Dysalotosaurus* remain alert. At the first hint of danger, these fast-moving dinosaurs will be off. As long as they are not taken by surprise, they should be able to outrun most meat-eaters. Their powerful hind legs will carry them away from less speedy attackers.

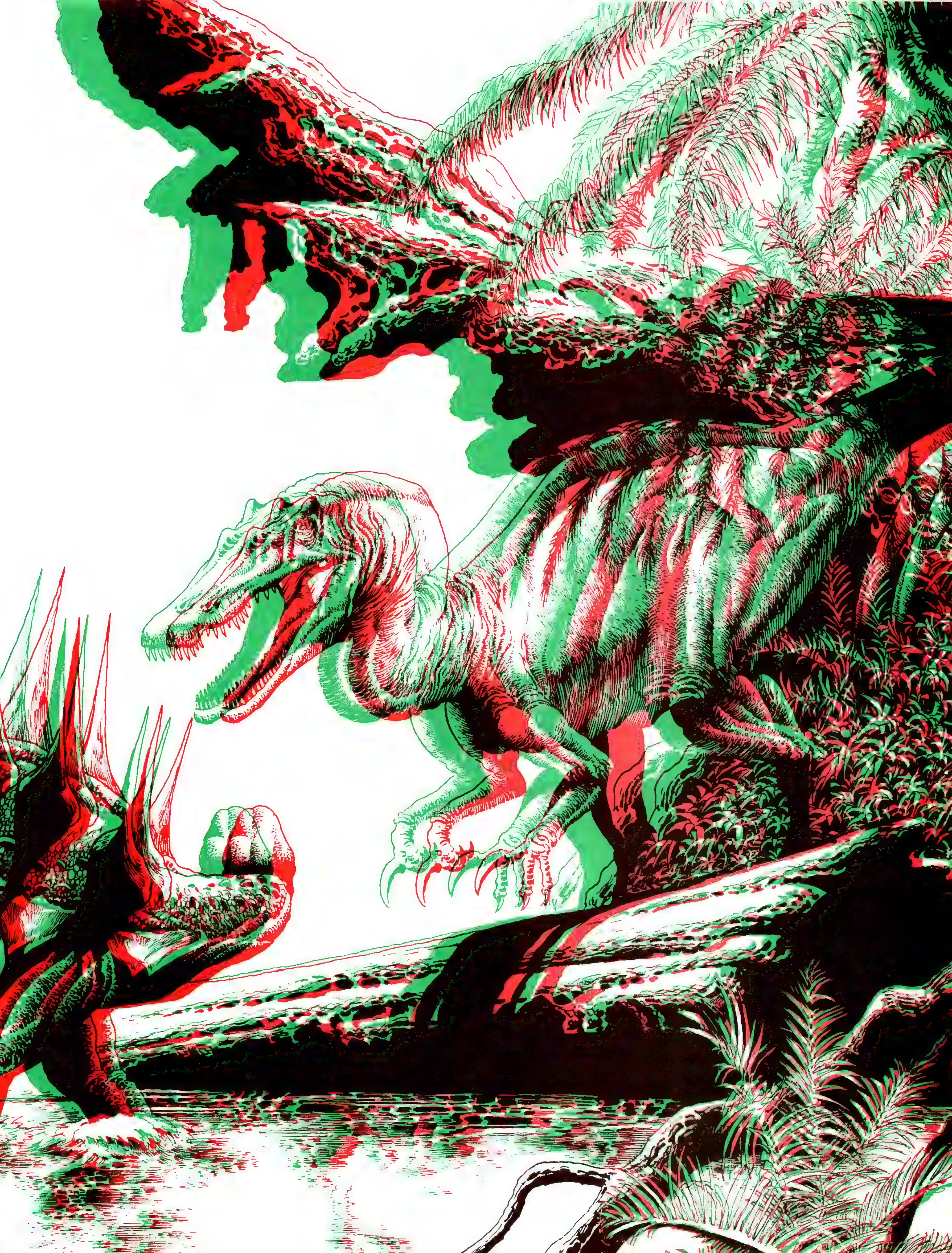


3-D Gallery 93

BARYONYX

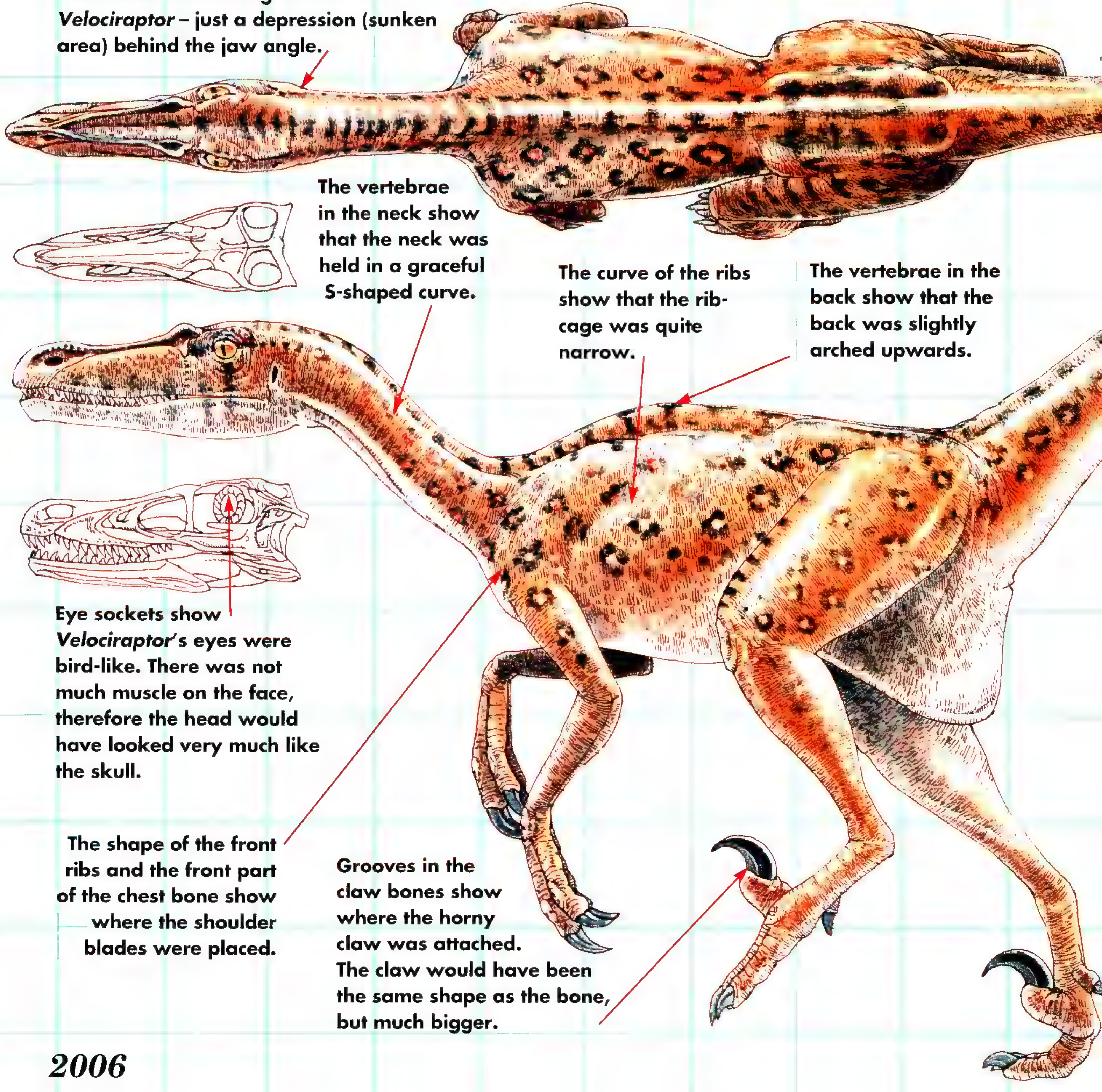
A hungry *Baryonyx* is furious to discover two *Polacanthus* disturbing its favourite fishing ground. It raises its heavy-clawed arms and shows its dagger-like teeth to frighten them away. Although well-protected, the two plant-eaters decide to allow *Baryonyx* to dine alone.





Dino-graph: Velociraptor

On rare occasions, scientists find a perfectly preserved dinosaur skeleton. This gives us lots of clues about what the creature looked like.



There were no sticking-out ears on *Velociraptor* – just a depression (sunken area) behind the jaw angle.

The vertebrae in the neck show that the neck was held in a graceful S-shaped curve.

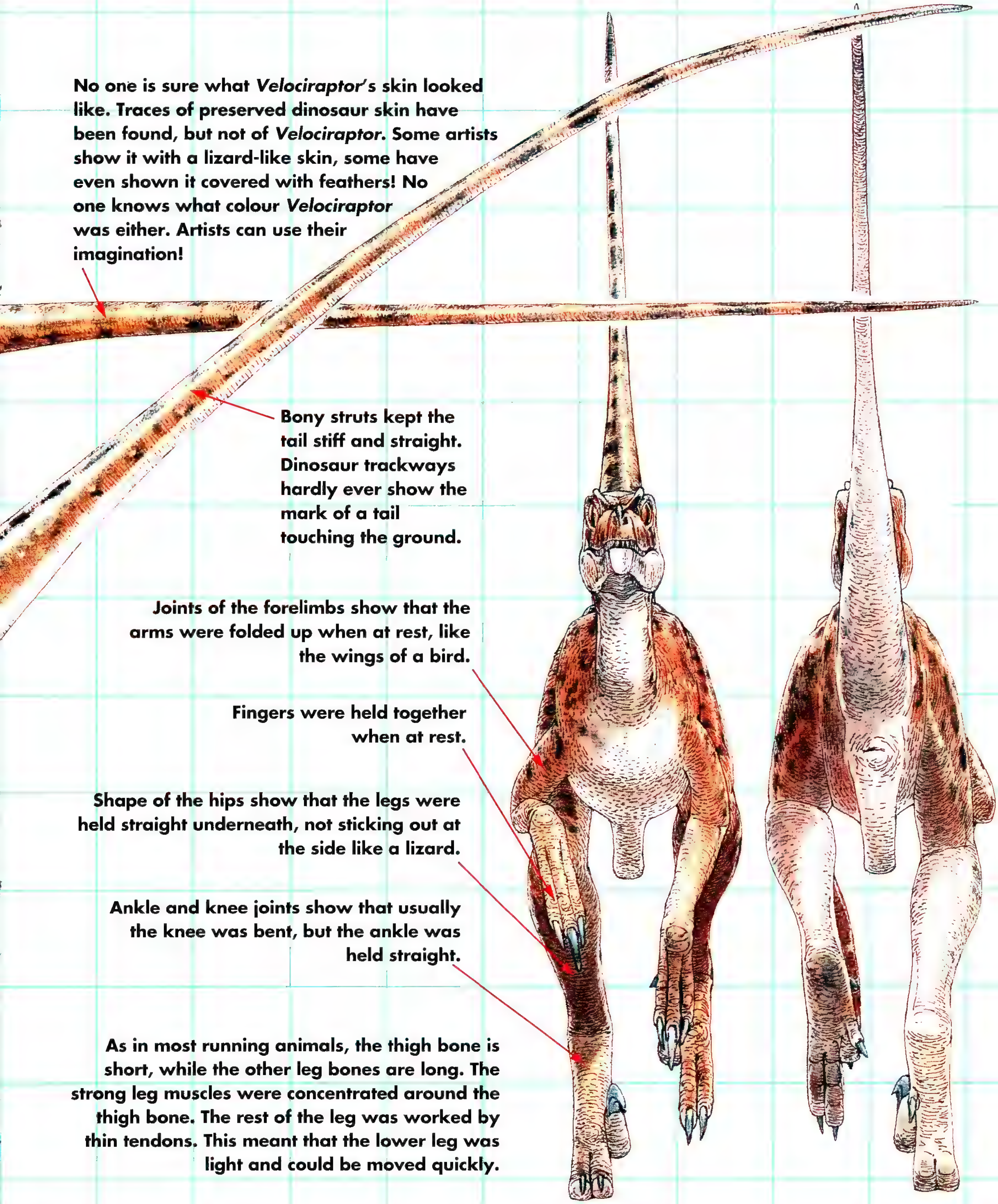
The curve of the ribs show that the rib-cage was quite narrow.

The vertebrae in the back show that the back was slightly arched upwards.

Eye sockets show *Velociraptor*'s eyes were bird-like. There was not much muscle on the face, therefore the head would have looked very much like the skull.

The shape of the front ribs and the front part of the chest bone show where the shoulder blades were placed.

Grooves in the claw bones show where the horny claw was attached. The claw would have been the same shape as the bone, but much bigger.



No one is sure what *Velociraptor*'s skin looked like. Traces of preserved dinosaur skin have been found, but not of *Velociraptor*. Some artists show it with a lizard-like skin, some have even shown it covered with feathers! No one knows what colour *Velociraptor* was either. Artists can use their imagination!

Bony struts kept the tail stiff and straight. Dinosaur trackways hardly ever show the mark of a tail touching the ground.

Joints of the forelimbs show that the arms were folded up when at rest, like the wings of a bird.

Fingers were held together when at rest.

Shape of the hips show that the legs were held straight underneath, not sticking out at the side like a lizard.

Ankle and knee joints show that usually the knee was bent, but the ankle was held straight.

As in most running animals, the thigh bone is short, while the other leg bones are long. The strong leg muscles were concentrated around the thigh bone. The rest of the leg was worked by thin tendons. This meant that the lower leg was light and could be moved quickly.

TIME DETECTIVE

Catching a Corythosaurus

Join a famous dinosaur hunter on the trail of an extraordinary crested dinosaur.

Early dinosaur hunters faced great problems. They had no modern machinery to help them collect their prize fossils. One of the best-known collectors was the American Barnum Brown. In 1910, he designed a special boat and braved rapids to track down a mystery fossil.

LUCKY BREAK

Barnum Brown struck lucky early in his career. In 1902, just five years after joining the American Museum of Natural History in New York, he discovered the world's first-known *Tyrannosaurus rex*, in eastern Montana, USA. This was the beginning of his career as a keen dinosaur hunter. A few years later, when strange fossils were spotted sticking out of the cliffs in Alberta, Canada, Brown headed north to investigate.

Barnum Brown

T-rex skull

From 1902 to 1909, Barnum Brown worked at Hell Creek, Montana, USA, around the Missouri River. In 1902, he discovered the world's first-ever *T-rex* skeleton there. In the following years, he found more *T-rex* remains and two skeletons of the duck-billed dinosaur, *Anatosaurus*.

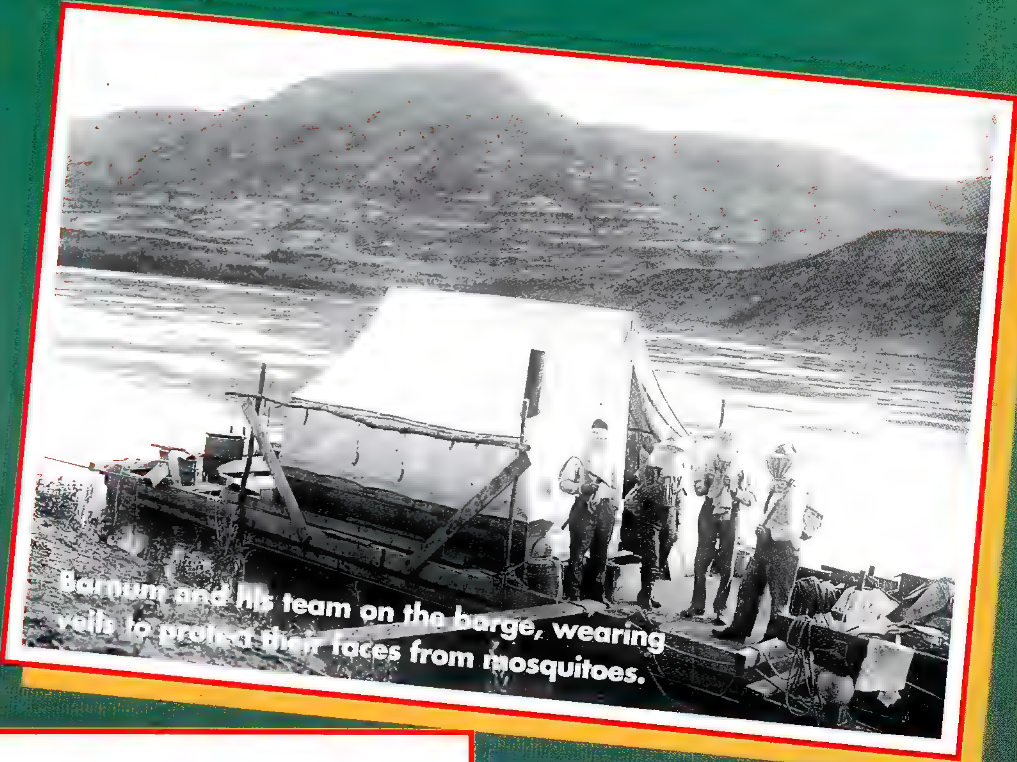
Using *Corythosaurus'* fossils, like the one Barnum Brown found (above) as a guide, experts have worked out how it may have looked when alive (right).

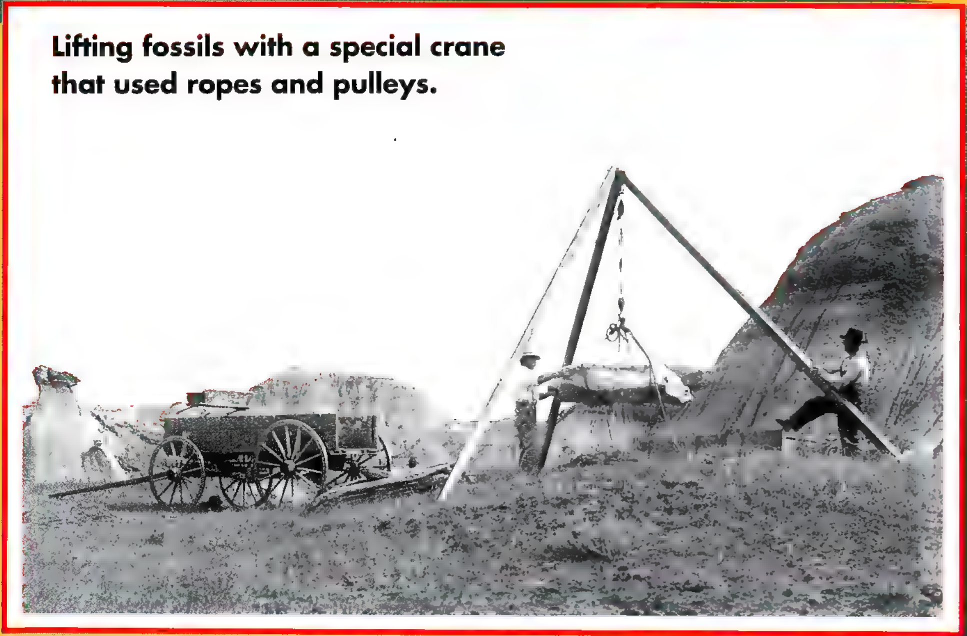
Is it true that Barnum Brown began looking for fossils in Montana because of a paperweight?

Yes. William T. Hornaday, Director of the New York Zoological Society, hunted buffalo in Montana. He brought back a fossil and used it as a paperweight. Brown saw that it was the horn of a *Triceratops*, and realised Montana was a fossil site.

RED DEER RIVER VALLEY

The first known *Albertosaurus*, a giant tyrannosaur, had been discovered in Red Deer River Valley in Alberta. And that was where the cliff fossils had been sighted. Barnum Brown decided the best way to reach the fossils was by sailing down the river on a specially-built barge.


Barnum and his team on the barge, wearing veils to protect their faces from mosquitoes.


Lifting fossils with a special crane that used ropes and pulleys.

BARNUM'S BARGE

Barnum Brown and the members of his expedition could sail close to the fossils, then moor the barge and step ashore. But the expedition had to brave rough water rapids and attacks by huge swarms of mosquitoes to reach the fossils embedded high up in the rocky river canyon.

HORSE-DRAWN DINOS

Barnum Brown and his team made a special crane with wooden beams, to lift the heavy fossils on to horse-drawn carts. These carts transported the fossils to the local railway station. The journey took several days. And it was many more days before the precious fossils arrived at the museum in New York, thousands of kilometres away.

[illegible] cargo

2010

DOUBLE DISCOVERY

In 1912, Barnum Brown excavated the first *Corythosaurus* fossils from the riverside rocks. He was thrilled to find that they belonged to a new species of dinosaur that had not been found before. Two years later, he discovered a more complete fossil of the same dinosaur. It was a beautifully preserved skeleton, with just the tail tip and part of the hands missing.

PLASTER PROTECTION

The huge skeleton was almost 8m long. Its fragile bones had to be protected with plaster 'jackets' to prevent them from crumbling. Many of the bones were still embedded in great chunks of rock, and had to be carefully eased out.

IT'S A FACT

THE GREAT DINOSAUR RUSH

As well as *Corythosaurus*, Barnum Brown discovered many other dinosaurs in Red Deer River Valley. His success started a rush of dinosaur-hunting in the area. His main rivals were Charles Sternberg and his three sons. They collected for the Canadian Geological Survey, and were very successful, too.

Another skeleton challenge for Barnum Brown.

HELMET LIZARD

Barnum Brown named his dinosaur *Corythosaurus*, or 'helmet lizard', because of the extraordinary crested shape of its head. The huge plant-eater was one of the strangest-looking dinosaurs that had ever been discovered. Experts now believe that *Corythosaurus* could make bellowing noises by pushing air through the crest. Tubes ran from its nostrils to the back of its throat and through the huge crest.

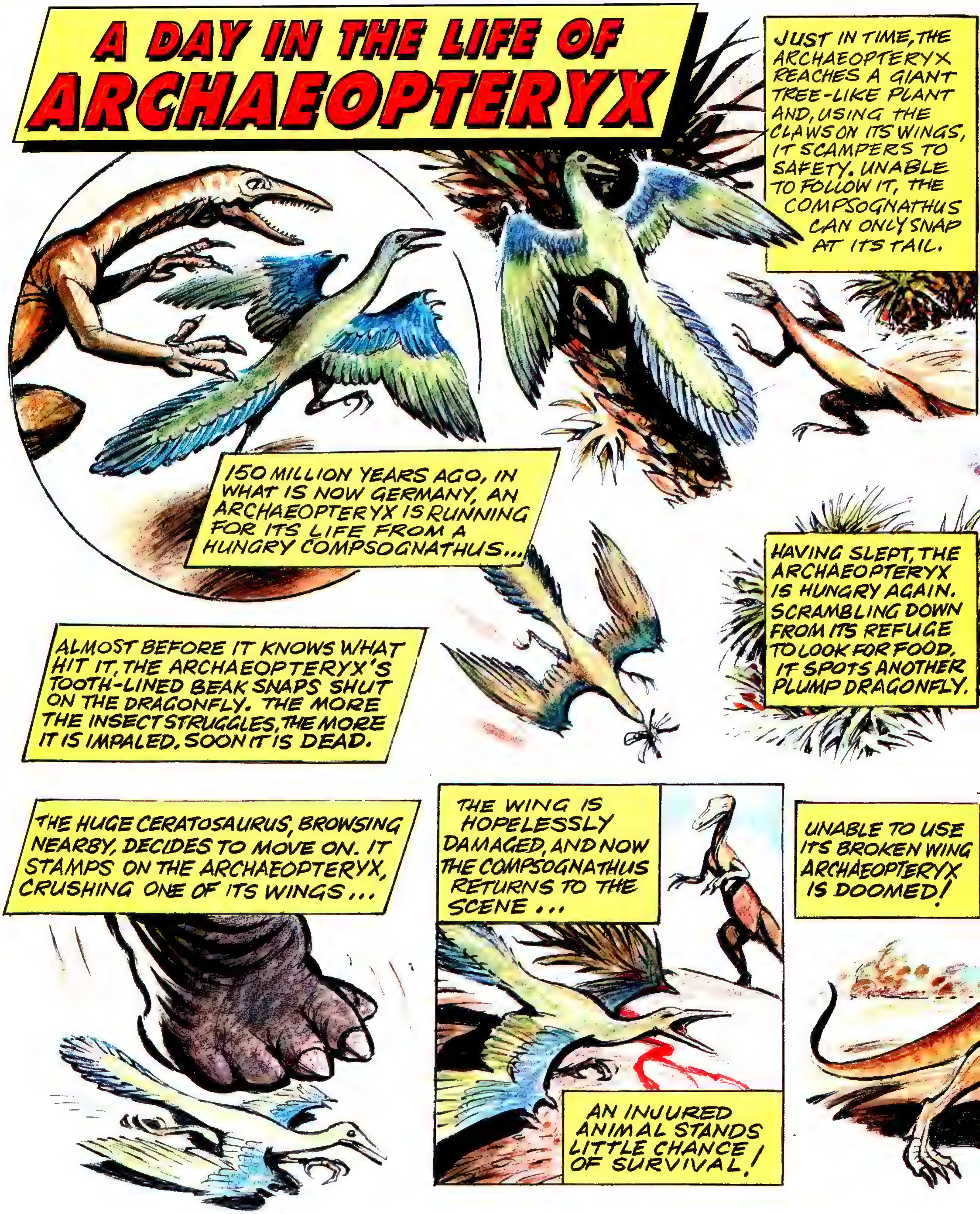
COMPLETE PICTURE

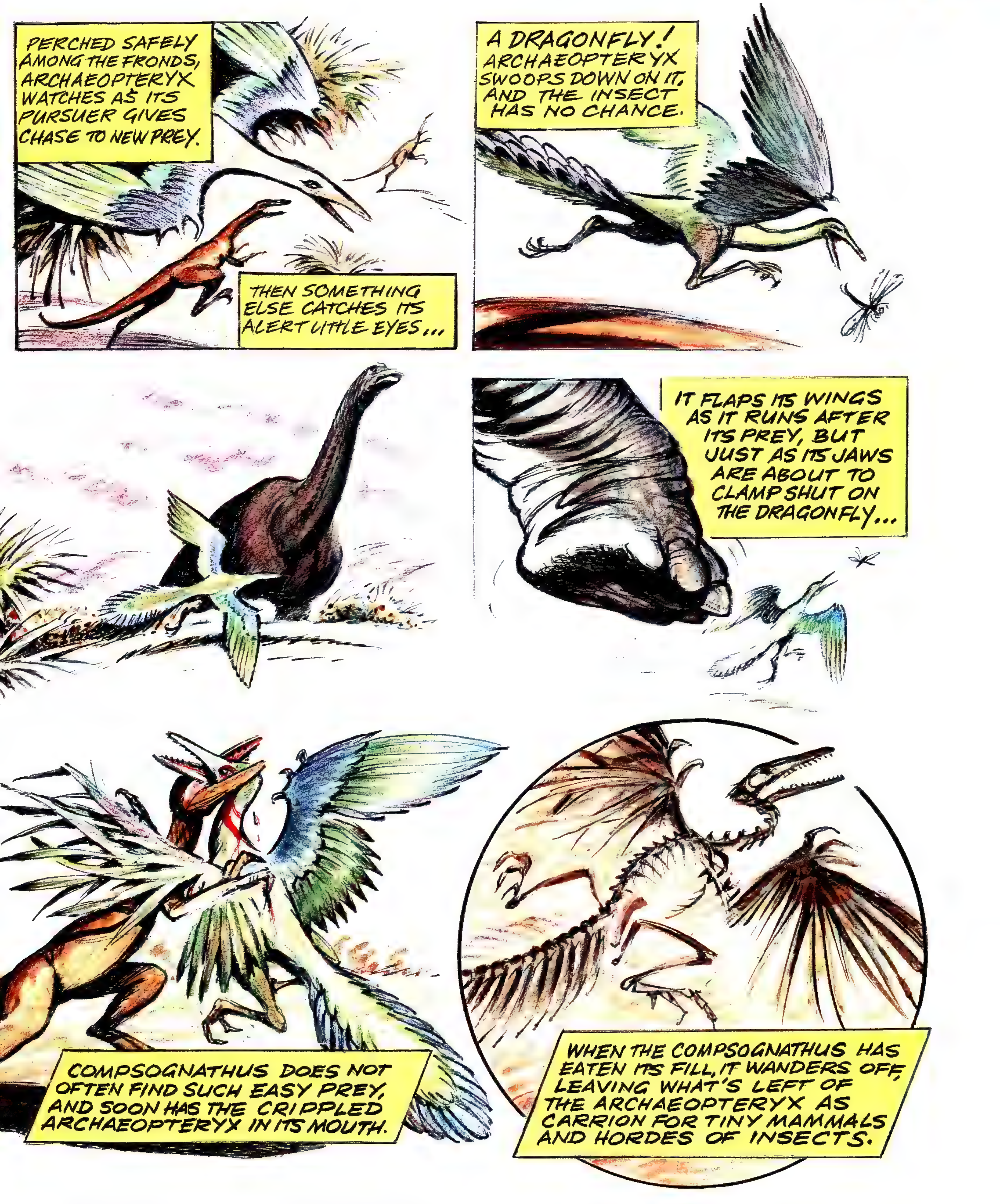
The bones of the skeleton discovered in 1914 were slightly crushed, but in their original positions. The shape of the huge creature was clear to see. The dinosaur had been dead for about 78 million years, but, incredibly, its fossilized skeleton had been preserved almost complete.

SHOW-STOPPER

The giant skeleton Barnum Brown and his team had discovered was carefully pieced together again by experts. Years of work were needed before the skeleton was finished. It is still one of the most spectacular and popular fossil exhibits at the American Museum of Natural History.

A DAY IN THE LIFE OF ARCHAEOPTERYX


150 MILLION YEARS AGO, IN WHAT IS NOW GERMANY, AN ARCHAEOPTERYX IS RUNNING FOR ITS LIFE FROM A HUNGRY COMPSOGNATHUS...
JUST IN TIME, THE ARCHAEOPTERYX REACHES A GIANT TREE-LIKE PLANT AND, USING THE CLAWS ON ITS WINGS, IT SCAMPERS TO SAFETY. UNABLE TO FOLLOW IT, THE COMPSOGNATHUS CAN ONLY SNAP AT ITS TAIL.
HAVING SLEPT, THE ARCHAEOPTERYX IS HUNGRY AGAIN. SCRAMBLING DOWN FROM ITS REFUGE TO LOOK FOR FOOD, IT SPOTS ANOTHER PLUMP DRAGONFLY.
ALMOST BEFORE IT KNOWS WHAT HIT IT, THE ARCHAEOPTERYX'S TOOTH-LINED BEAK SNAPS SHUT ON THE DRAGONFLY. THE MORE THE INSECT STRUGGLES, THE MORE IT IS IMPALED. SOON IT IS DEAD.
THE HUGE CERATOSAURUS, BROWSING NEARBY, DECIDES TO MOVE ON. IT STAMPS ON THE ARCHAEOPTERYX, CRUSHING ONE OF ITS WINGS...
THE WING IS HOPELESSLY DAMAGED, AND NOW THE COMPSOGNATHUS RETURNS TO THE SCENE...
AN INJURED ANIMAL STANDS LITTLE CHANCE OF SURVIVAL!
UNABLE TO USE ITS BROKEN WING ARCHAEOPTERYX IS DOOMED!


PERCHED SAFELY AMONG THE FRONDS, ARCHAEOPTERYX WATCHES AS ITS PURSUER GIVES CHASE TO NEW PREY.
THEN SOMETHING ELSE CATCHES ITS ALERT LITTLE EYES...
A DRAGONFLY! ARCHAEOPTERYX SWOOPS DOWN ON IT, AND THE INSECT HAS NO CHANCE.
IT FLAPS ITS WINGS AS IT RUNS AFTER ITS PREY, BUT JUST AS ITS JAWS ARE ABOUT TO CLAMP SHUT ON THE DRAGONFLY...
COMPSOGNATHUS DOES NOT OFTEN FIND SUCH EASY PREY, AND SOON HAS THE CRIPPLED ARCHAEOPTERYX IN ITS MOUTH.
WHEN THE COMPSOGNATHUS HAS EATEN ITS FILL, IT WANDERS OFF, LEAVING WHAT'S LEFT OF THE ARCHAEOPTERYX AS CARRION FOR TINY MAMMALS AND HORDES OF INSECTS.

Improve and test your knowledge with...

FACT FILE

Fascinating facts to read and 10 fun questions to answer!

Dirty bite

Monitor lizards keep their teeth dirty. The rotting food stuck there makes their bite poisonous and helps kill their prey. Tyrannosaurs may have done the same.

1 In the Triassic, the only continent was called:
a) Uniterre
b) Euramerasia
c) Pangaea

2 Lizard-like *Tanystropheus* had a very long:
a) neck
b) tail
c) claw

3 *Teleoceras* was related to today's:
a) rhinoceros
b) hippopotamus
c) whale

4 Dinosaur hunter Barnum Brown was inspired by:
a) a local circus
b) a paperweight
c) his Aunt Agatha

5 *Dysalotosaurus* escaped predators by:
a) running away
b) hiding in caves
c) swimming underwater

6 Barnum Brown reached *Corythosaurus* by:
a) bicycle
b) donkey
c) barge

7 *Archaeopteryx* lived in what is now:
a) Germany
b) Canada
c) Disney World

8 *Compsognathus* was:
a) cow-sized
b) chicken-sized
c) elephant-sized

9 What did *Baryonyx* eat as well as meat?
a) fruit and nuts
b) leaves
c) fish

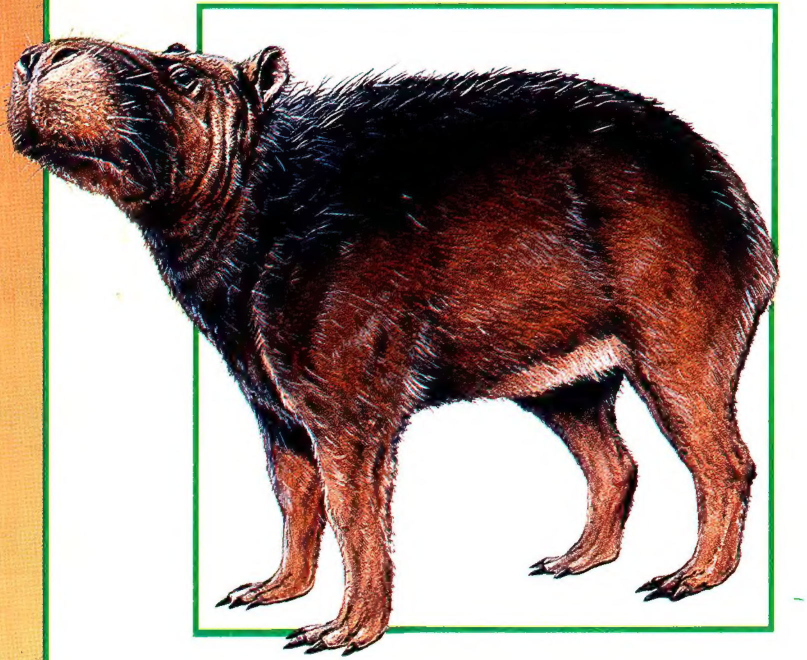
Swim trim

Plesiosaurs swallowed stones to help them to balance in the water. Animals today, such as penguins and sea lions, do this as well. All these animals 'fly' through the water with their paddles. Animals that swim by using their tail fins, as prehistoric ichthyosaurs and mosasaurs did, and today's whales do, did not swallow stones.

Time span

The first specimen of the prosauropod, Ammosaurus, was a partial skeleton found by builders laying the foundations of a bridge in Connecticut in the 1880s. A hundred years later, the bridge was demolished and the rest of the skeleton was found!

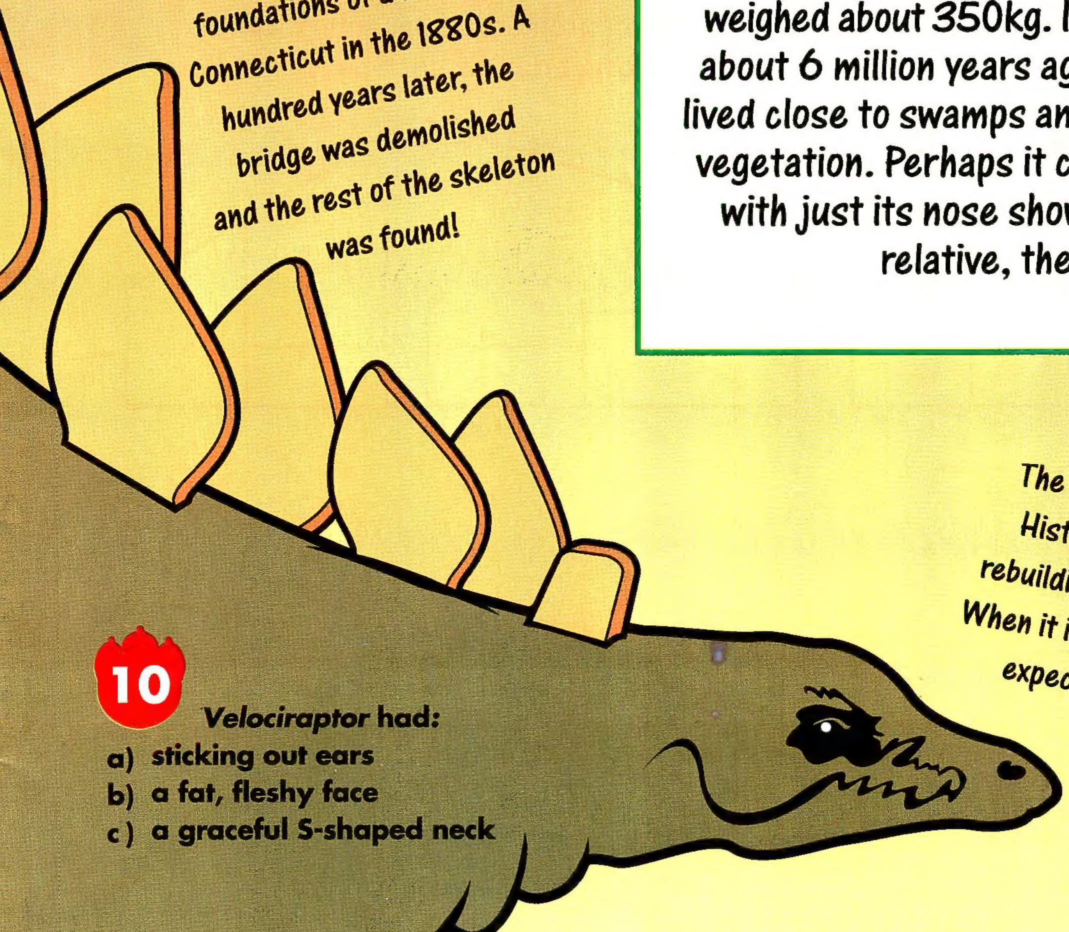
What a pet!



Protohydrochoerus was related to today's guinea pig but grew to about a metre high and weighed about 350kg. It lived in the Pliocene about 6 million years ago.Protohydrochoerus lived close to swamps and lakes, feeding on the vegetation. Perhaps it could rest under water with just its nose showing, like its modern relative, the capybara.

Dear dinos

The American Museum of Natural History in New York is currently rebuilding its whole dinosaur section. When it is complete, in 1995, the bill is expected to reach $40 million.



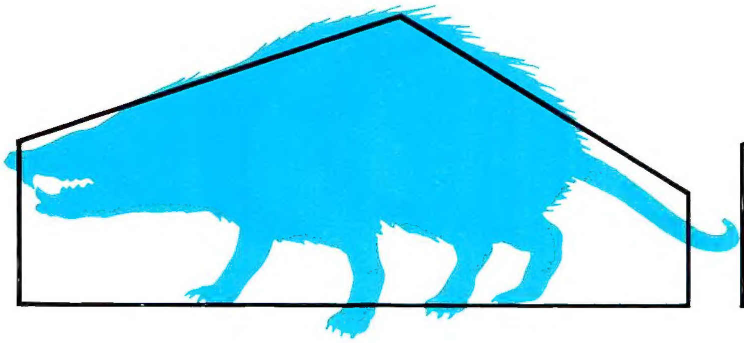
10 ***Velociraptor* had:**

a) sticking out ears
b) a fat, fleshy face
c) a graceful S-shaped neck

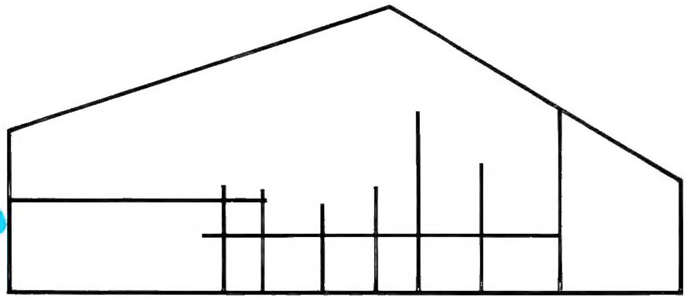
Answers to the questions on inside back cover

DEINOGALERIX

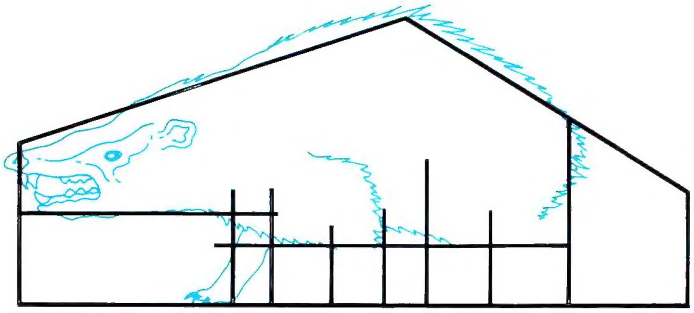
1 Begin by pencilling in the basic shape of the animal in the middle of the paper. *Deinogalerix* is a hairy hedgehog and its shape is roughly that of a long, low house.



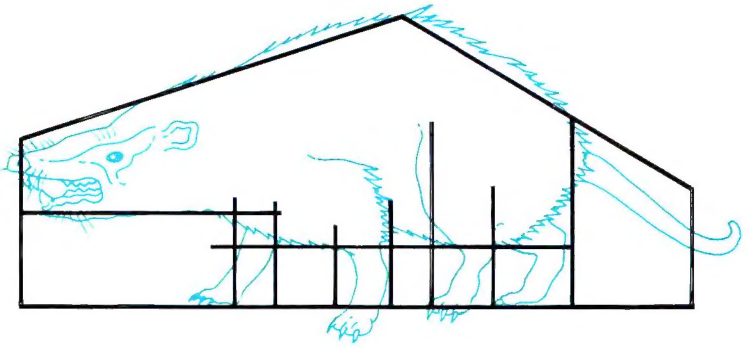
2 Mark in more lines to give you the position of the the head and legs. These are just guidelines so you can pencil them in roughly at this stage.



3 Now you can begin to put in the details of *Deinogalerix*' face. In our picture it is snarling fiercely and showing its sharp, pointed front teeth.



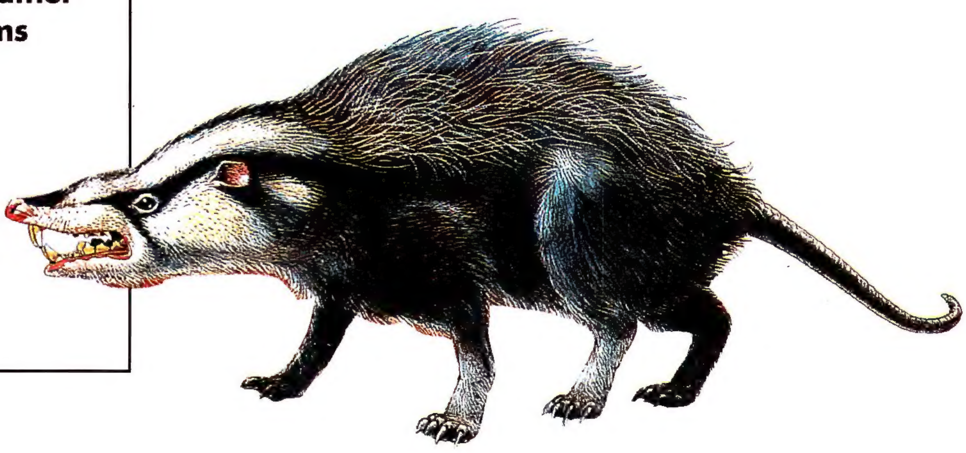
4 Finish *Deinogalerix* by drawing in the legs and tail. Colour it as you imagine a meat-eating prehistoric hedgehog would look! Don't forget details such as its whiskers.



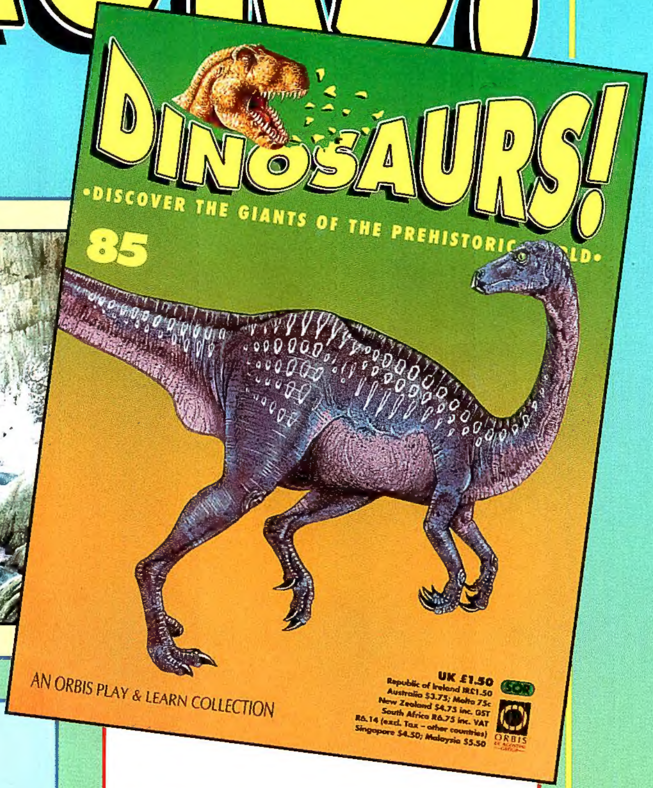
Fact box

***Deinogalerix* was a hunter, feeding on small lizards and mammals rather than the insects and worms today's hedgehogs eat.**

- **NAME:** *Deinogalerix* (dine-oh-gal-er-ix) means 'terrible hedgehog'
- **GROUP:** mammal
- **SIZE:** about 35cm long
- **LIVED:** about 10 million years ago



COMING IN PART 85 OF



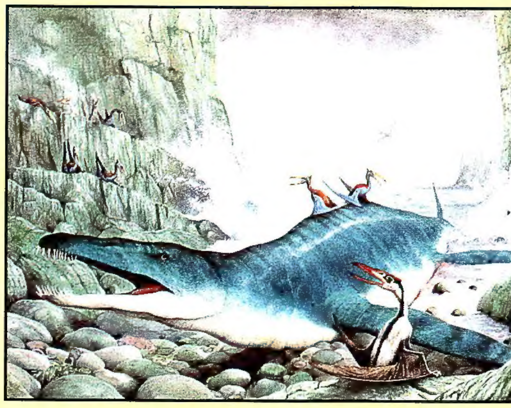
•DISCOVER THE GIANTS OF THE PREHISTORIC WORLD•

85

AN ORBIS PLAY & LEARN COLLECTION

UK £1.50
Republic of Ireland IR£1.50
Australia $3.75; Malta 75c
New Zealand $4.75 inc. GST
South Africa R6.75 inc. VAT
R6.14 (excl. Tax – other countries)
Singapore $4.50; Malaysia $5.50

Would dinos be any use as work animals? Find out in TIME DETECTIVE. Learn who ate the trees in PREHISTORIC WORLD.



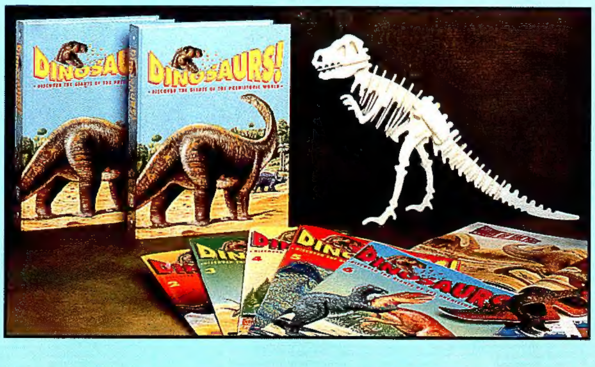
PLUS

Three fascinating creatures in
IDENTIKIT
and
HISTORY IN PICTURES
3-D GALLERY
GIANTS OF THE PAST

Keep your DINOSAURS! safe

Keep your copies safe and neat with these fantastic binders.

Your binders have been designed to look good at home or at school. Each is sturdy and hardwearing – it even has a wipe-clean cover – and holds 13 issues. You'll want to use your DINOSAURS! collection again and again – for reference, for school projects, or just for fun. So don't let your copies go missing; keep them in your own set of binders.



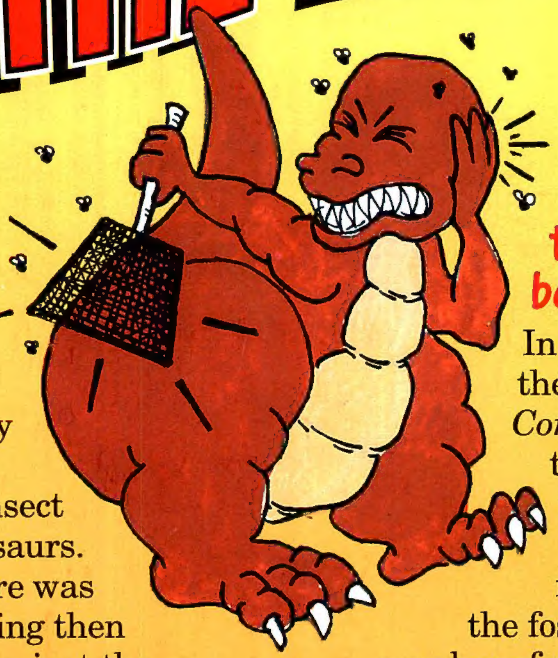
DINOSAURS! binders are now available and cost just £4.95 (including £1 p&p). Please refer to the information on the inside front cover or telephone 0424 755755 for details.

PICTURE CREDITS: Front cover: Graham Rosewarne. Neg Nos 37243, 18552, 18547, 19488, 19493, 18502 Courtesy Department Library Services, American Museum of Natural History 2008T, 2009TL, 2010T,C,B, 2011; M Long/The Natural History Mueum, London 2015TR; The Natural History Musem, London 1995TR, 2008B; Zefa 1999BR.
Artwork: Wendy Bramall/WLAA 2000-1; R.Budden/WLAA 1996, 1997; Mike Dorey 2012-13; John Francis/Bernard Thornton Artists 2009; Janos Marffy 1998-99; Bob Mathias 2016T; Deidre McHale BC; Nick Pike/WLAA; 2002-3 James.Robins 2006-7, 2016B; Graham Rosewarne 1993, 1994-95; Steve White 2004-5.

ANSWERS TO FACT FILE QUESTIONS: 1.c 2.a 3.a 4.b 5.a 6.c 7.a 8.b 9.c 10.c

Dr David Norman of Cambridge University answers your dinosaur questions

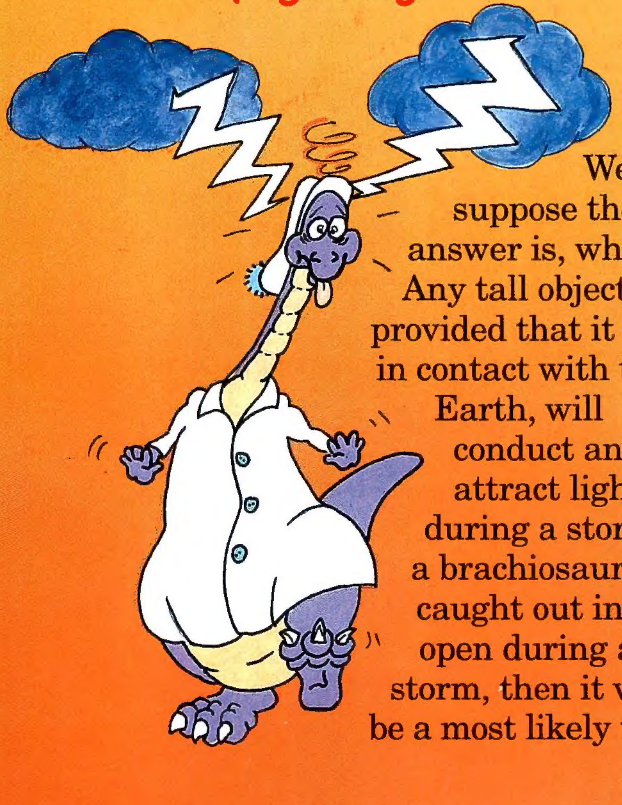
ASK THE EXPERT



Would flies and other insects have buzzed around dinosaurs, as they do around horses and cows today?

The answer is, almost certainly yes. Palaeontologists have begun to piece together the insect world during the time of dinosaurs. Their work suggests that there was a profusion of insect types living then and that they would have been just the same sort of nuisance as they are today.

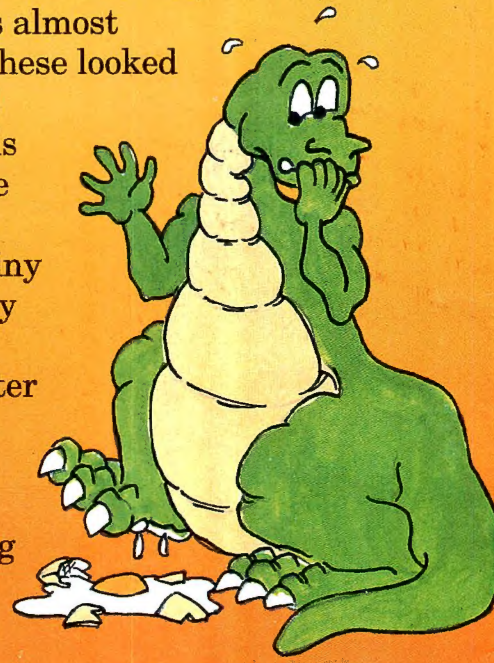
Could tall dinosaurs have been struck by lightning?



Well, I suppose the answer is, why not? Any tall object, provided that it is in contact with the Earth, will conduct and attract lightning during a storm. If a brachiosaur was caught out in the open during a storm, then it would be a most likely target.

Presumably, tiny dinosaurs laid very tiny eggs. Have any been found?

In recent years a fossil of the chicken-sized dinosaur *Compsognathus* became the subject of detailed investigation for just this reason. It was noted that around the the fossil there was a large number of small circular, and in some cases almost spherical, objects. These looked uncannily like eggs! We cannot prove this absolutely, but there is now very strong suspicion that the tiny *Compsognathus* may well have been a female. And that after death, the animal's rotting and swollen body eventually burst as it was being buried by sediment. The eggs were expelled into the sediment to be fossilized and found centuries later.



84

9 771351 122017